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THE EOLITHIC PROBLEM — EVIDENCES OF A RUDE INDUSTRY ANTEDATING THE PALEOLITHIC

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INTRODUCTION

Nature's processes may be likened to photography. She furnishes the sensitized film, and the finger of Time manipulates the camera. It remains for man to develop and interpret the exposures. The geological record is a film cartridge exposed and sealed again, bound up with which are the beginnings of man's own record on the earth. The process of development begins with the most recent exposure and works backward.

For a long time we had a picture of man's neolithic record only. In the early part of the last century, Boucher de Perthes, with the help of Sir Joseph Prestwich and others, clipped off another section of the film, which when developed revealed the long chapter of our paleolithic history. It took a good while for some of us to accept the interpretation put upon that picture. When finally and generally accepted, there was in many quarters a feeling of relief that we had at last reached the end, or rather the beginning, of the series of Father Time's snapshots at our primitive ancestors. Nevertheless, to some persistent investigators it seemed worth while to take another pull at this enigmatical film. They appear to have been rewarded by a bona fide negative; but, to say the least, there is a certain superficial indistinctness about it that has rendered the print rather unsatisfactory to some minds. Recently the negative has been so strengthened that we are now practically assured of a picture worthy of a frame, and a place on the walls of our prehistoric gallery.

In the order, then, of their taking, these three views may be labeled: (1) Eolithic, (2) Paleolithic, and (3) Neolithic. Sir John Lubbock, now Lord Avebury, furnished the names for the second and third. The first was christened as late as 1892 by another Englishman, Mr J. Allen Brown,[1] fellow of the Geological Society, and an enthusiastic student of the prehistoric. Two years later de Mortillet made use of the term "eolithic" for the first time by him, in his *Classification palethnologique*,[2] but did not refer to J. Allen Brown's article. The latter, in discussing the rude specimens found on the North Downs by Mr Benjamin Harrison, suggested that the term "eolithic" be applied to the "roughly hewn pebbles and nodules and naturally broken stones showing work, with thick, ochreous patina, found on the plateaux of chalk and other districts in beds unconnected with the present valley drainage." The de Mortillet classification was republished in 1900.[3] Leaving the paleolithic to represent the early Quaternary, he applied the term eolithic to all that has to do with the Tertiary. Dr Rutot of Brussels, to whom we are indebted more than to any one else for our knowledge of the eolithic period, and whose work will be discussed at length in this paper, does not limit it chronologically to the Tertiary. In his classification,[4] the early phases of the Quaternary, those connected with the first grand extension of the glaciers, are also eolithic, the well-known hache type (Chellean) of implement not appearing until the second advance of the ice.

When Thomsen published his relative chronology for prehistoric times in 1836, the only stone age known was that which is now called the neolithic period. Boucher de Perthes's first discovery of paleoliths came just two years later; but they were not accepted until after (Sir) Joseph Prestwich's visit to Abbeville in 1859. Eoliths have had a still longer and harder struggle for recognition. When first reported in 1867, they at once attracted considerable attention. After a lively discussion that lasted for

[1] On the continuity of the paleolithic and neolithic periods; *Jour. Anthr. Inst.*, March 8, 1892; XXII, pp. 93–94. Brown died Sept. 24, 1903.

[2] *Bull. Soc. d'anthr. de Paris*, 1894, p. 616.

[3] *Le préhistorique*, 3e éd.

[4] L'état actuel de la question de l'antiquité de l'homme; *Bull. Soc. belge de géol., de paléon. et d'hydrol.*, Bruxelles, 1903, XVII, p. 425.

five or six years, the subject was relegated to the background. It might have passed into oblivion had it not been for the researches of Sir Joseph Prestwich in England, begun about fifteen years ago, and for the more recent work of Rutot in Belgium. Some of the details in its eventful history are worthy of record here.

Early Discoveries

The discovery in Pliocene deposits of incised bones first served to awaken an interest in the question of Tertiary man, and led more or less directly to the later discovery of flints thought to have been chipped intentionally. In fact, Sir Charles Lyell would not formulate an opinion as to the nature of the incisions on bone found by Desnoyers[1] in the sand and gravel-pit of Saint-Prest, near Chartres, because the deposits had yielded no stone implements. But not long after (1867), the Abbé Bourgeois found in the same deposits what he considered to be stone implements. These were obtained at various depths in the high-level gravels (Pliocene) at Saint-Prest and did not include the amygdaloid (Chellean) type generally supposed at that time to represent the earliest industry in stone. The associated fauna consisted of: Elephas meridionalis, Rhinoceros etruscus (Falconer), Hippopotamus major (?), Equus arnensis, Trogontherium cuvieri, three species of Cervus and one of Bos.

The Abbé Bourgeois's researches were soon extended to the Miocene at Thenay, and formed the subject of important communications to the International Anthropological Congresses of 1867 and 1872. At the latter, held in Brussels, a committee of fifteen was appointed to report on the chipped flints from Thenay, submitted by Bourgeois. Nine of the Committee — de Quatrefages, d'Omalius, Cartailhac, Capellini, Worsaae, Valdémar Schmidt, de Vibraye, Franks, and Engelhardt — pronounced in favor of certain specimens; five — Steenstrup, Virchow, Neyrinckx, Fraas, and Desor — found no evidence of intentional shaping; and one — Van Beneden — was unable to decide. De Mortillet remained to the last a champion of the Thenay specimens, some of which are preserved in the Musée des Antiquités Nationales at Saint-Germain. On the

[1] Note sur des indices matérials de la coéxistence de l'homme avec l'Elephas meridionalis, etc.; *C.-R. Acad. des sciences*, Paris, 1863, p. 1073.

other hand, researches made by Professors Capitan and Mahoudeau in 1901 have led them to combat the existence of artifacts in the deposit at Thenay. Rutot withholds judgment until further evidence is forthcoming. At the Brussels Congress (1872), Carlos Ribeiro presented a paper on chipped flints from the Upper Miocene and the Pliocene deposits near Lisbon, Portugal. Later, one of his compatriots, Delgado, discovered similar specimens in the Upper Miocene at Otta. But the consensus of opinion is that the pieces from the valley of the Tagus and from Otta are not artifacts.

A better fate has been reserved for the discovery by J. B. Rames, in 1877, of chipped flints in the Tertiary at Puy-Courny[1] near Aurillac (Cantal). The beds resting on Miocene basalt are alluvial, and belong to the Upper Miocene. They contain the following fossils, as determined by Gaudry: Dinotherium giganteum, Mastodon (angustidens or longi-nostris), Rhinoceros schleiermacheri, Hipparion gracile, Tragoceros, and Gazella deperdita. All the flints possess a brilliant black or dark yellow patina. The retouches and marks of utilization are most convincing. After a careful study of the pieces, de Mortillet, Cartailhac, Chantre, and Capellini declared that if these flints had been found in Quaternary deposits, no one would hesitate to regard them as having been chipped intentionally. De Quatrefages was of the same opinion, fresh confirmation of which is being received through the recent researches of Capitan, Rutot, Courty, and others. Until the question of the Thenay specimens is settled, those from Puy-Courny may be regarded as the oldest known artifacts, geologists being agreed as to the age (Upper Miocene) of the deposit, and archeologists as to the genuineness of the industry.

The Chalk Plateau

A tradesman of Ightham, Kent, Mr Benjamin Harrison, an enthusiastic naturalist who had been collecting paleoliths from the River drift of the neighborhood for years, extended his field of search in 1885 to include the summit of that portion of the Chalk plateau which lies between the valley of the Darent on the west and

[1] Two other stations in the neighborhood of Puy-Courny, but of less importance, are Belbex and Puy-Boudieu.

that of the Medway on the east. Here, at heights of from 400 to 600 feet above the sea, he discovered flints supposed to have been fashioned by the hand of man.

In the next six years Harrison brought together a collection numbering more than 1,000 specimens. In the meantime (1888) his researches attracted the attention of Sir Joseph Prestwich, whose country-seat was at Shoreham in the Darent valley near by. Thirty years earlier, Prestwich had confirmed the accuracy of Boucher de Perthes's discoveries in the valley of the Somme. He had now found a second Boucher de Perthes nearer home. Harrison's discoveries, however, did not have to do with paleoliths, but with the industry of a much earlier date. Here the geological conditions are entirely different. Harrison left the paleoliths and the Quaternary behind when he ascended to the North Downs. The specimens he found there are uniformly and deeply stained to a warm, ocherous brown color, precisely as are the natural flint fragments associated with them, the coloring matter being the red clay in which they are imbedded, and which is found in patches capping the summits of the Chalk plateau. Associated with this red clay is a southern drift, carried there from the still higher elevations to the south, at a time when the chalk bridged the present fertile valleys of the Weald (woodland), connecting the North Downs of Kent with the South Downs of Sussex.

According to Prof. Rupert Jones, the implements are always accompanied with chert and ragstone from the outcrop of Lower Greensand on the side of the old Wealden range that once rose 2,000 to 3,000 feet over what are now Crowborough and other Sussex hills. The red clay with flints, that stained the implements, is, on the contrary, of local origin and occurs over other areas as well as those reached by the southern drift containing the rude implements.

The southern drift on the summit of the plateau is older, then, than the great chalk escarpment or the valleys of the Darent and Medway, which drain the Wealden district and, on their way northward to the Thames, cut the Chalk plateau into three sections. The escarpment and the broad valleys of the present drainage system are older than the gravel terraces occurring at various

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levels in the valleys. But, according to Prestwich, all these terraces up to a height of about 340 feet above sea-level are of post-glacial age and contain flint implements of the paleolithic type. The paleoliths associated with bones of the Mammoth and woolly rhinoceros found in the gravel-pits at Aylesford,[1] only a few feet above the present bed of the Medway, are later than those found in the high-level valley terraces; these in turn are subsequent to the great denudation that swept away the chalk bridge spanning the Weald and uniting the North and South Downs; and finally, from the very nature of things, this enormous denudation must have taken place subsequent to the time when the southern drift was carried northward and deposited with the red clay on the summit of the North Downs, where patches of it still exist.

Other evidence conclusive of the great antiquity of the plateau drift, as well as of the successive river drifts of the Thames valley, may be furnished by a section (figure 15) extending from the Lower Greensand hills, near Ightham, northward to the Thames at Milton Street. Such a section would pass through the summit level of Swanscombe hill, capped by Tertiary strata and forming an outlier of the older drift. This hill with its spread of southern drift, though not much more than 300 feet high, corresponds with the gradient of the plateau if extended southward and upward till it reaches West Yoke and Ash, where Harrison found some of his first specimens. At Milton Street, north of Swanscombe hill, and near the village of Swanscombe, the high-level river drift is met with at an elevation 200 feet lower than the plateau drift on the summit of Swanscombe hill. The Milton Street river drift is 100 feet above the Thames, and contains flint implements of the well-known amygdaloid (Chellean) type; while at a still lower level are brick-earths and gravel in which, associated with Quaternary mammalian remains, are found flint implements of a type later than those at Milton Street. Hence, there are at least three distinct and successive steps from Ash down to the Thames: plateau drift with eoliths, high-level river drift with paleoliths, and low-level river drift with paleoliths of a more perfected type. These epochs do not include

[1] I found remains of both Mammoth and Rhinoceros in the pits at Aylesford. I also obtained from one of the workmen a flint implement of the Acheulian type.

the neolithic culture of the region, evidence of which may be found on the surface at all levels.

The section described does not cut the Chalk plateau through its highest elevation, which, at Titsey hill, west of the Darent valley, is 864 feet above the sea. Even here, De Barri Crawshay found a patch of red clay and southern drift, with implements of the plateau type. This drift was transported across the chalk escarpment and the chalk plain into the Thames valley along lines independent of the present drainage; the patches that now cap the highest points marking what were then the valleys.

Prestwich thinks the southern drift may be of later date than the locally derived red clay with which it is so intimately associated. Both are older than the northern drift or bowlder-clay and newer than the outcrop of Tertiary strata that caps the chalk at Swanscombe hill. Prestwich calls them simply pre-glacial, Rutot places them in the Middle Pliocene. The geological age of the plateau drift could be determined still more definitely were it not for two missing links in the chain of evidence. In the first place, the Tertiary series of deposits are not all present. The second difficulty arises from the absence of organic remains, the property of the infiltrating waters being such as to dissolve all calcareous elements as completely as if they were lumps of sugar. As soon, however, as the high-level river terraces are reached, the older type of paleoliths are found in association with a fauna in part now extinct.

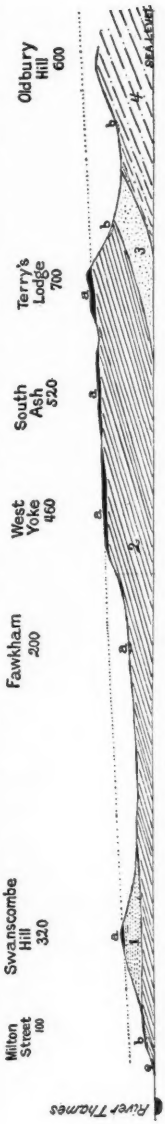


FIG. 15. — Section from the Thames to Oldbury Hill near Ightham, Kent (after Prestwich). 1, Tertiary. 2, Chalk. 3, Upper Greensand and Gault. 4, Lower Greensand. *a*, Red clay with flints — eoliths. *b*, Upper valley-gravel — paleoliths. *c*, Low-level valley-gravels — paleoliths.

The Shelly gravel-pit at Swanscombe is a good example. I am indebted to Mrs Stopes, wife of the late Henry Stopes, for some excellent examples of early paleoliths from this pit which has furnished remains of Elephas antiquus, Elephas primigenius, Corbicula fluminalis, and many other species, living as well as extinct.

There is no doubt as to the great age (pre-glacial) of the plateau deposit of red clay with flints and southern drift, even though the fauna has not been preserved. There remain, however, two other questions to be disposed of, namely: (1) Do the specimens found by Harrison bear marks of use by man or of design in form? — and (2) Are they as old as the patches of clay and drift on the summit of the plateau? Prestwich answers both these questions in the affirmative.

Before formulating answers of my own or even accepting those of another, I determined to study the problems involved at closer range. Photographic reproductions and drawings of specimens shaped into definite patterns may give one absolutely true impressions of the originals. They are, on the other hand, far from satisfactory in the case of the rudely-shaped eoliths. Therefore, I spent a part of the summer of 1903 in Kent with Harrison himself and with Mr Percival A. B. Martin of Chipstead, Sevenoaks, a trained collector and disciple of Harrison. Before going to the field, I made a careful study of the important series collected by both these investigators, who placed themselves as well as their collections unreservedly at my disposal. Mr Martin gave additional facilities in the use of his automobile during my week's stay, thus rendering it possible to accomplish much in a comparatively short time. We made the ascent by the Vigo to the Chalk plateau, and visited many of the best-known stations on the summit. Collections were made at several of these places, especially at Fairseat and in Terry's Lodge pit, opened the previous year by Messrs Harrison and Benton (of Malling) and at their joint expense.

My excursions in Kent were supplemented by visits to the collections of the British Museum at Bloomsbury and South Kensington, as well as to the private collection of Mr W. J. Lewis Abbott at St Leonard's-on-Sea. The eoliths in the British Museum, Bloomsbury, were collected on the North Downs by Harrison.

The larger and more characteristic collection at South Kensington is the gift of Sir Joseph and Lady Prestwich, and includes the specimens figured in Prestwich's "Collected Papers on some Controverted Questions of Geology." These also for the greater part were collected by Harrison.

Mr Abbott, of St Leonard's-on-Sea, was for many years a resident of Sevenoaks and is perhaps as well acquainted with prehistoric Kent as anyone. His collection is one of the most important, and his technical knowledge of the problems involved in the art of chipping flint is of the first order. I spent two days with him, including a visit to the local Museum at Hastings in which he is much interested and where a part of his collection has already been installed. To him and to Messrs Harrison and Martin I am indebted for a number of valuable specimens as well as for information and guidance in the field.

Returning now to the questions already propounded in the light of what I saw in Kent, Sussex, and London, I feel impelled to accept the conclusions of Prestwich, namely, that many of these plateau flints bear the impress of man's handiwork. The marks are often the result of use alone and not of design. This is due partly to the fact that the people of that time did not know how to obtain the raw materials from the chalk, but depended entirely on picking up from the drift natural flakes of approximately the shape and size needed. A sharp edge was utilized once, twice, or until it became dulled, and was then cast aside. The signs of use, though slight, are unmistakable. If an angular piece did not admit of being comfortably grasped in the hand, the troublesome corners were removed. Some pieces were used simply as hammer- or trimming-stones. Perhaps a majority of the specimens show no special design in their shape. Many, however, may be grouped according to more or less definite patterns. Prestwich recognizes three such groups. The first is rather numerous, including thin, flat fragments of flint or natural flakes with chippings and notches along the margins, producing at times rude points; split flint pebbles of Tertiary age with edges chipped to serve as scrapers; and flints that, with a little trimming, could be easily grasped in the hand and used as hammer-stones. The second group is the largest of all and is characterized

by various types of scrapers. Two of these deserve special mention, viz., the small crescent-shaped scrapers comparable to the spoke-shave, and the double scrapers with an intervening point separating the two scraping edges. The third group is small and is represented by various fling-stones and drill-shaped implements.

In every case the eolith does not represent so much a preconceived form of implement as a resultant of a given natural form modified by certain marks of utilization, of adaptation, or by series of retouches. The shape of a chosen flake was not wholly determined by the uses for which it was intended, but was limited largely by the variety in Nature's supply of the raw material. The discovery that knives and forks were the best substitutes for teeth and fingers was not made in a single generation. It is safe, therefore, to assume that it took the combined effort of generations of eolithic experimenters to arrive at the idea of correlating a given form of tool with a given use or series of uses. As long as any flake served the purpose of the workman, Nature's supply sufficed. As soon as it was learned that a certain form of implement served him better in certain instances than any other form, he discovered that it would not do to depend on the chance finding of specimens suited to his growing needs. This led him of necessity to supplement the natural supply, a lesson which was not learned until the beginning of paleolithic times, as we shall soon see.

How very different are the valley implements! Their makers no longer depended on pebbles and angular fragments, but knew how to extract the raw material direct from the chalk. With the use of large, fresh, flint nodules, the art of chipping developed rapidly. The establishment of local workshops followed as a logical consequence. Some of these workshops have been left undisturbed so as to make it possible to reconstruct large flint nodules and cores from the numerous chips and implements strewn over a paleolithic floor. Mr F. C. J. Spurrell[1] found such a workshop at Crayford, Kent. The series he obtained there forms an interesting exhibit at the Museum of Natural History, South Kensington. Similar discoveries have been made by Mr J. Allen Brown at Acton, and by Mr Worthington G. Smith at Stoke Newington

[1] *Quar. Jour. Geol. Soc.*, 1880, XXXVI, 544.

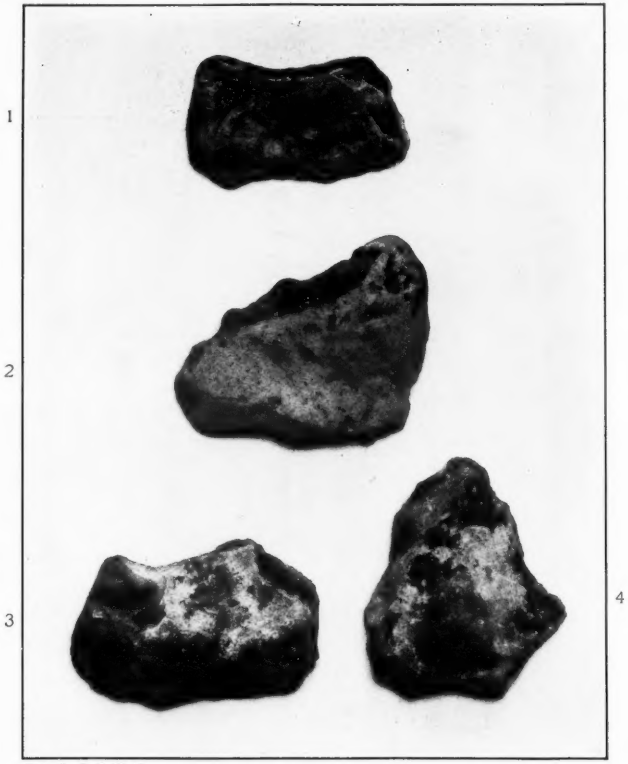
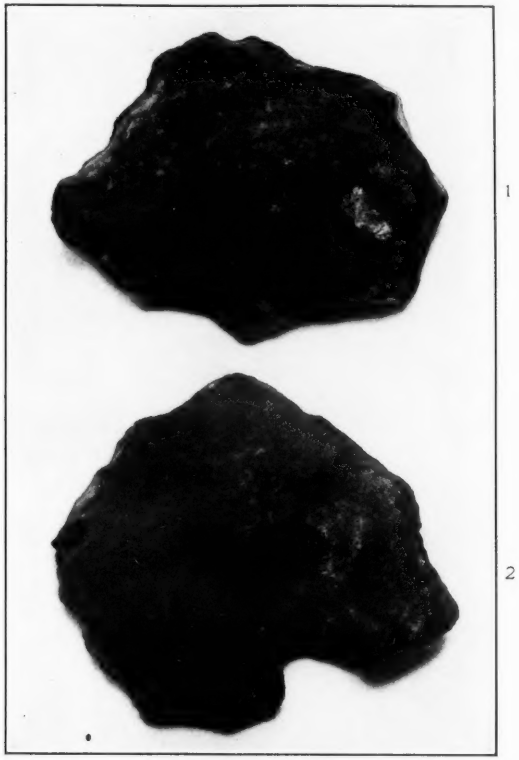


Photo by G. G. MacC.

A. 1, Farnham, Surrey (p. 435). 2, Farnham, Surrey (p. 435). 3, Terry's Lodge pit, Chalk Plateau, Kent (p. 438). 4. Terry's Lodge pit, Chalk Plateau, Kent (p. 438).



B. 1, Fawkham, Kent (p. 437). 2, Parsonage Farm, Stanstead, Kent (p. 436).

EOLITHS FROM SURREY AND KENT, ENGLAND (ABOUT THREE-FIFTHS NATURAL SIZE)

and Caddington. During the summer of 1900 it was my good fortune to visit several of the clay pits about Caddington in company with Mr Smith and to see in one of the pits a typical paleolithic floor.

Are the plateau implements as old as the drift with which they are associated? Might they not have been dropped on the surface of the Downs in paleolithic or even in recent times? Unpolished neolithic implements may be met with on the surface at any level; but they differ in both form and condition from the specimens in question. Their edges are often dulled, but never water-worn. The originally dark surfaces have taken on a whitish luster and are more or less plough-stained. The eoliths, on the contrary, are uniformly stained on the natural as well as on the worked surfaces, to a deep, ocherous brown color, and usually bear marks of drift action.

The neoliths are confined to the surface, but are not limited geographically. The eoliths are limited geographically, but, as we shall see later, are not confined to surface finds. They are coëxtensive with the old drift. But this drift is found in patches only, much of it long since having been removed from the summit of the Downs by denudation. If the patches that are left yield eoliths, others must have been carried away along with the drift to the valleys below, where one would expect to find them as derived specimens. A few such examples have been obtained after careful search. Figures 1 and 2, plate XXV, A, belong to this category. I found them in a middle terrace gravel-pit near Farnham, Surrey. I also obtained two paleoliths of the usual type from the same pit. The derived implement shown in figure 1 is a natural flint flake, 4.5 cm. in length. The slightly convex surface of fracture is stained bluish white, and the rusty white crust is retained intact over the outer surface. The chipping, which is confined to a single lateral margin, was done with so much care that an overhanging prominence of the external crust, which would be supposed to receive the first ill-directed blow, was left untouched. The prominence might well have served both as a rest and as a protection for the thumb. The specimen shown in figure 2 is likewise a natural flake. It is weathered more deeply than the preceding. The piece is

triangular in shape. The chipping is confined to the longest margin, the blows being given from one direction and in the same plane. Nowhere else is there evidence of even accidental blows.

Harrison's first plateau discoveries were made on the surface, in shallow plough furrows or in trenches and roadside cuttings. Their deep staining, however, led Prestwich to believe that the specimens had been imbedded in a deposit beneath the surface. An implement from a post-hole at Kingsdown, one from a hole dug two feet deep for tree-planting at Parsonage farm, a third from two or more feet beneath the surface in a bank of red clay at the side of a pond, and a fourth at an equal depth in red clay at the Vigo gap, served to strengthen Prestwich's view.

In 1894 the British Association for the Advancement of Science appointed a committee "to investigate the nature and probable age of the high-level flint-drift in the face of the Chalk escarpment near Ightham, which appears to be productive of flakes and other forms of flint probably wrought by the hand of man." A grant was placed at the disposal of this committee, which consisted of Sir John Evans (chairman), Professor Prestwich, Prof H. G. Seeley, and Mr Benjamin Harrison (secretary). Mr Pink, the owner of Parsonage farm, Stanstead, had previously sunk a pit in the drift, and had found plateau implements at a depth of six or seven feet. Adjoining this, the committee's first pit was sunk through two and a half feet of "humus and drifted material, white flints, pebbles, and many ochreous flints worn and worked";[1] three and a half feet of "grey loam, with scattered small pebbles, and a few small, worked, ochreous flints throughout"; and one foot of compact gravel with many worked flints. A second pit was sunk near by and revealed "precisely similar conditions." The latter was sunk to a depth of twenty-six feet, most of the way through Lower Tertiary pebbles without reaching the Chalk. No implements were found below a depth of eight feet.

Through the courtesy of Mr W. J. Lewis Abbott, the Yale University Museum possesses an eolith (plate XXV, B, fig. 2) that was found *in situ* in the first pit sunk on Parsonage farm, Stanstead, the year before work was begun by the British Association. It is a large

[1] *British Association Report*, 1895, p. 349.

natural flake, the greatest diameter being 9.7 cm. The outer surface retains the crust of the original nodule, the inner is stained yellowish brown. In shape it resembles the feline foot, trimmed in the region of the toes, the heel left untouched, and a deep notch near the heel carefully worked. It might have been used as a hammer or trimming-stone, and the crescent-shaped notch near the heel could well serve as a spoke-shave. The specimen represented in figure 1 of the same plate, also the gift of Mr Abbott, is from Fawkham, some distance to the north of Stanstead. It is a natural flake from the old flint drift, and is much more deeply weathered than the one from the Stanstead pit. Eoliths of this general type may have been used as strigils as illustrated by the Apoxyomenos statue in the Vatican, or after the manner of the natives of Tierra del Fuego, who will not easily part with their much-prized body-stones. In this connection it should be mentioned that the illustrations accompanying this paper are of specimens from the collections made by me during the summer of 1903. Some I found myself, others were obtained from local collectors. All are now the property of the Yale University Museum.

The eoliths figured in plate XXVI, A, were found at South Ash by Mr Benjamin Harrison. Figure 2 is one of the largest eoliths in the Yale collection, its greatest diagonal dimensions being 12 cm. The inner, flat surface is stained to a deep, warm brown color which spreads also over the trimmed edges, where it is only slightly less pronounced in tone. The flake was, therefore, evidently not fresh when first utilized. The working was all done in one direction, the blows being aimed toward the outer crust. Chance chipping would have reduced the somewhat prominent heel which, though angular, serves admirably as a handhold. Figure 1 is a double scraper, with an intervening point between the two scraping edges. The base has been retouched enough to make it fit the hand more comfortably. The worked surfaces are covered with a mottled stain of bluish gray and buff, while the flat surface of fracture has taken on a warmer hue.

Mention has already been made of Terry's Lodge pit opened in 1902 by Messrs Harrison and Benton. On the occasion of our visit to this pit, which is sunk to a depth of about five feet, very near the

face of the chalk escarpment at a point 700 feet above sea-level, we were successful in finding, after an hour's digging, two specimens[1] *in situ* that were evidently worked. Two worked pieces were also picked up from the heap of clay and gravel thrown out when the pit was first opened. These are both illustrated in plate XXV, A, figs. 3 and 4. They are natural flakes stained to a rich, reddish brown color. The specimen represented by figure 3 is a crescent-shaped scraper of the spoke-shave type, and may be classed with Prestwich's second group referred to on page 434. Figure 4 is an example of the first group. It is roughly triangular in shape; the two margins which meet at the apex are both worked, but on opposite sides. In other words, after chipping one of the margins, instead of rotating the specimen until the adjacent margin was brought into play, it was reversed. Pieces that show reversed chipping would seem to possess special claim to consideration as artifacts. One loves to think of Chance as being unhampered in her actions. It would tend to upset one's habitual regard for her strict impartiality to find her, for instance, not only bunching her blows along a single margin of a flint flake, but also administering them in a given plane and from a given direction. To go further and demand that she should reverse the flake before beginning on an adjacent margin would be to ignore all the rules of probability.

My experiences in the field, as may be inferred, served at every point to strengthen my belief in Prestwich's conclusions; namely, that the plateau specimens bear marks of man's handiwork, and that they sustain the same relation to the old southern drift as the valley specimens do to the gravel terraces in which they are found. Prestwich's views are shared by practically all the many archeologists who have made personal investigations in the field.

Kent is not the only county in which the eoliths occur. Mr O. A. Shrubsole, of Reading, found them in Berkshire soon after Harrison's first discoveries on the North Downs. They have also been found under similar conditions by Martin on the South Downs

[1] The best one of these, together with other plateau specimens, was used to illustrate a paper read before Section H at the St Louis Meeting of the A. A. A. S., 1903–04. As it disappeared, mysteriously, on that occasion, I conclude that it must have been convincing to at least one member of the audience.

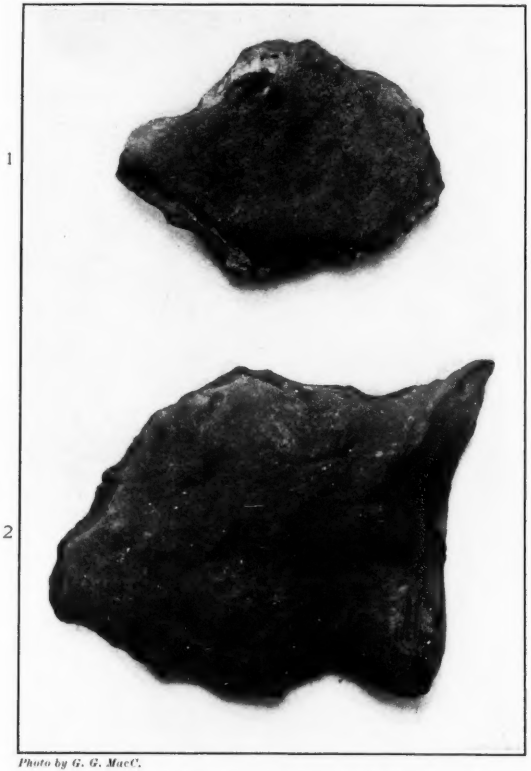
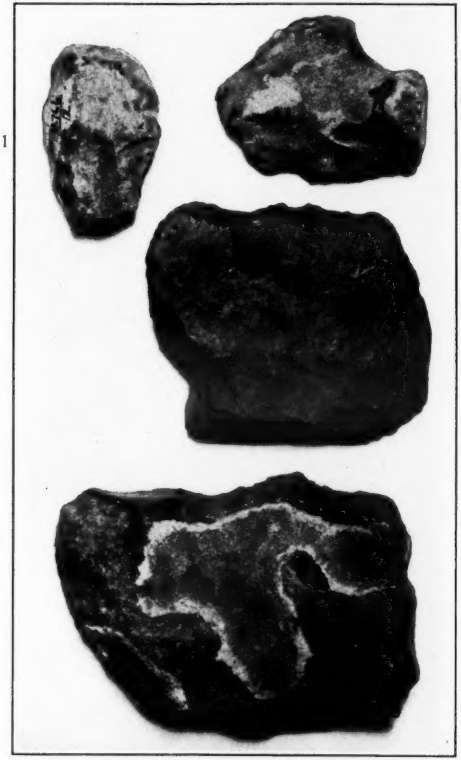


Photo by G. G. MacC.

A. 1, South Ash, Kent (p. 437). 2, South Ash, Kent (p 437).



B. 1, Harmignies, Belgium (p. 461). 2, Harmignies, Belgium (p. 460). 3, Bois d'Epinois, Belgium (p. 461). 4, Harmignies, Belgium (p. 460).

EOLITHS FROM ENGLAND AND BELGIUM (ABOUT THREE-FIFTHS NATURAL SIZE)

at Beachy Head, near Eastbourne, Sussex; by Blackmore, Bullen, and others near Salisbury, Wilts; and in Dorset; also in Surrey, Hampshire, the southern part of Essex, and Norfolk. For details of the various discoveries, the reader is referred to the bibliography accompanying this paper.

The deposits investigated by Shrubsole consist of pre-glacial gravel beds, from five to ten feet in thickness, that cover "the summit of an elongated plateau stretching from Easthampstead, Berks, to Ash Common, near Aldershot." They are composed of the same southern drift that has furnished the implements found on the North Downs, and had their origin in the heights that once rose over what is now the Wealden district to the south and southwest.

The gravel-capped plateau rises to an average level of about 400 feet above the sea, and "forms the highest ground between the rivers Wey and Blackwater." The specimens described came chiefly from Finchampstead, Easthampstead, and from near Bagshot. They present precisely the same general aspect as do those from the North Downs. Shrubsole believes them to be as old as or older than the gravel beds. His opinion is based on their mineral condition, and on the fact that he, himself, took them "from the gravel freshly fallen from the face of the pits, or from the heaps of screened gravel in the pits." It is pointed out that no artificial flakes and no implements of the amygdaloid type have been found in these gravels — a bit of negative evidence that gathers much weight when correlated with evidence of the same nature from other parts of the country.

The gravels rest upon what Shrubsole calls the Upper Bagshot. But, according to Geikie,[1] there is no marked separation between the Upper and the Middle Bagshot series in the London basin. They may be, therefore, of either Middle or Upper Eocene age. The gravels capping them are newer; probably Upper Pliocene, since Prestwich was disposed to regard them as corresponding broadly in time with the Chillesford and Forest-bed groups, and these are Upper Pliocene.[2] If fluviatile, they "would be the work of a stream which for a long time has ceased to exist, since its bed

[1] *Textbook of Geology*, 4th ed., 1903, p. 1233.
[2] Ibid., p. 1281.

now occupies the summit of a hill-range, and on the sites of the former hills are now river valleys."

Dr H. P. Blackmore's discovery at Dewlish, Dorset, of eoliths associated with the remains of Elephas meridionalis was announced to the Victoria Institute in 1900, through a letter to the Rev. R. Ashington Bullen. The Blackmore Museum in Salisbury is of special interest to Americans because it contains the famous Squier and Davis collection of antiquities from the Mississippi valley, purchased by Blackmore before its value was appreciated in this country. The same museum now possesses an important collection of eoliths. Many of these were found by Dr Blackmore in the Alderbury gravels near Salisbury, he having taken them out of the gravels at all levels, to a depth of fourteen feet, with his own hands. These Alderbury gravels were classed as Southern Drift by Prestwich. Like the deposits on the Kent plateau, they are not fossiliferous. They rest upon the Bagshot sands, and "are at a much higher level than the river drift, which furnishes both flint paleolithic implements and a very good list of Pleistocene mammals and shells."

The Alderbury gravels are exploited largely for road-metalling; and for twenty years, at least, the pits have been searched in vain for implements of the well-known paleolithic type. On the other hand, specimens of this type are fairly plentiful in the river-drift terraces of the neighborhood.

In his effort to establish the age of the eoliths by means of paleontological evidence, Dr Blackmore had recourse to a patch of gravel in Dorset, where his grandfather had found a molar of Elephas meridionalis, as long ago as 1813; and where he, himself, was present at the discovery, in 1887, of the remains of Elephas meridionalis now in the Dorchester Museum.

Dr Blackmore, in describing his search for eoliths, writes:

"Being very anxious to fix the Pliocene age of these eoliths [meaning those from near Salisbury], rather more than a year ago I went down to Dewlish, in Dorset, with the express purpose of carefully examining the gravel which had furnished the remains of Elephas meridionalis, as this was the one spot in the South of England which was regarded as a patch of Pliocene gravel.

"The farmer, Mr. Kent, on whose land the elephant remains were

found, was fortunately known to me, and he furnished me with two labourers. A trench was opened through the deposit of gravel, and there was no difficulty in finding eoliths, stained like the gravel, at the same level and associated with the elephant bones. This was to me most satisfactory and conclusive."

A recent letter to me from Mr Percival A. B. Martin describes a new locality for eoliths about six miles west of Eastbourne, as follows:

"The plateau drift caps a hill that is about 600 feet above sea level, and evidently belongs to the same spread of drift as that at Beachy Head, which also was the bottom of a very ancient valley, the vestiges of which are now preserved only on the very highest points of the district."

The Chalk cliffs at Beachy Head are familiar to every Channel voyager. The Chalk suddenly disappears at Eastbourne and does not reappear until one is opposite Dover, a distance of more than 50 miles. It is not generally known that the cliffs at Beachy Head and Dover are the bases of a great anticlinal fold whose axis passes from Dungeness in a westerly direction through Hampshire. The crest of the fold, including not only the Chalk beds but also the underlying strata of Upper Greensand, Gault, Lower Greensand, and Weald, has disappeared. If, before it disappeared, the old drift and eoliths were transported northward and left on the North Downs, the same old drift with eoliths must have been carried southward and deposited on the South Downs. A line drawn from Ash to Beachy Head would cut the axis of the fold at right angles. Martin thought he ought to find the old drift with eoliths at Beachy Head, and we have just seen how his search has been rewarded.

Both plateaus are but slender tongues from the great Chalk plain of Dorset, Wiltshire, and Hampshire, the tip of one being at Dover, that of the other at Beachy Head. Each will be explored eventually throughout its extent. The Chalk plain itself may be relied on for localities other than those already discovered. The Chalk is also continuous all the way from Dorset and Salisbury Plain in a northeasterly direction to Cromer on the Norfolk coast. At the southwestern extremity of this Chalk belt Dr Blackmore found eoliths associated with the remains of Elephas meridionalis; at its northeastern extremity, Abbott found a like association in

deposits of the same age. The results of the researches of Worthington G. Smith at Caddington, near Dunstable, about midway between Dewlish and Cromer, are an indication of the possibilities of the entire Chalk belt.

Mr W. J. Lewis Abbott's discovery, mentioned above, was made while searching the Elephas deposits of the Cromer Forest bed, to the west of East Runton. In the same level with Elephas meridionalis, Abbott found several worked flints, two *in situ;* others, because of their peculiar staining, evidently from the same bed. I saw these specimens, and with Abbott believe in their artificial character. Rutot, of Brussels, to whom Abbott sent the specimens for examination, is of the same opinion. An added interest attaches to the Forest bed implements in view of the recent researches by Laville and Rutot in the Upper Pliocene deposits at Saint-Prest, near Chartres, the station that came into prominence nearly forty years ago through the discoveries of the Abbé Bourgeois.

Belgium

Reference has already been made to early discoveries bearing on a pre-paleolithic industry in France and Portugal. In recent years the theater of interest and action has centered in Belgium, owing largely to the researches of Dr A. Rutot, of the Royal Museum of Natural History, Brussels. Admirably fitted by special training in engineering and geology, Rutot early took up the study of the Belgian Quaternary. This work led naturally to the subject of prehistoric anthropology (Quaternary and Pliocene), and to the work of such men as Gabriel de Mortillet. But Rutot did not believe in the new faith preached by de Mortillet, and in laying deep and broad plans to compass its destruction, he was led gradually to the conclusion that some at least of its tenets were true in the main. The chief difficulty was that, being in advance of his time, de Mortillet's work lacked the benefit of that constructive criticism without which a founder's work is apt to prove faulty when the time comes to add the superstructure. Rutot has endeavored to retain the sound construction and to eliminate the faulty. The foundations have been enlarged, and there has arisen a superstructure embodying as nearly as possible the ideas that are likely

to survive. The chief cornerstones of the Rutot edifice are stratigraphy and paleontology.

It must not be inferred that Belgium had contributed nothing toward a solution of the eolithic problem before Rutot's time. The name of Gustave Neyrinckx has already been mentioned in connection with the committee appointed by the International Congress of Anthropology and Prehistoric Archeology (held at Brussels in 1872), to pass judgment on the Thenay specimens presented by the Abbé Bourgeois. To Neyrinckx belongs the honor of being the first discoverer of eoliths in Belgium; but he did not live to see the fruits of his discovery mature. The value of his pioneer work is now recognized, and the specimens he found in the newly-made railway cut at Mesvin, between Mons and Harmignies, in 1868, are now a highly-prized possession of the Royal Museum of Natural History, Brussels. M. Émile Delvaux next took up the work at Mesvin, where he succeeded in determining stratigraphically a pre-chellean industry to which he gave the name Mesvinian — an epoch that Rutot later embodied in his system of prehistoric chronology.

But the pre-chellean industry at Mesvin is Quaternary and not Tertiary. This fact is of prime importance for several reasons. The industry-bearing deposits of Puy-Courny are accepted as Upper Miocene. Those of the Chalk plateau are Middle Pliocene, according to Rutot; and those of Saint-Prest, the Cromer beds, and Dewlish, are Upper Pliocene — all of Tertiary age. Further, according to the de Mortillet chronology which appeared in 1894, and again in 1900, all pre-chellean implements were classed as Tertiary. The amygdaloid implement was supposed to date back as far as the beginning of the Quaternary; to be, in fact, the only type of early Quaternary artifact — a supposition without foundation, as has been abundantly proved by Rutot and his colleagues in Belgium. The error arose from taking the river drift of Chelles as a type station, and from lack of a systematic study of undisturbed Quaternary deposits. In his exhaustive studies of scores of Belgian stations, Rutot has supplied this deficiency. A correlation of the data thus gathered has not only thrown a flood of light on the work of earlier investigators, but has also illumined hitherto

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untrodden fields, and points the way to a future full of promise to the student of the prehistoric.

Turning from the Tertiary eoliths of France and England, let us consider the Quaternary eoliths of Belgium. Rutot's search for eoliths was much simplified by his early recognition of the two conditions essential to their occurrence, viz.: (1) The presence in abundance of utilizable raw material on the surface of the soil, either in the outcropping of Cretaceous flint-bearing rocks, and the clays due to the decomposition and dissolution of the chalk; or in the valley drift; and (2) Proximity to a water course. These conditions obtained at the very beginning of the Quaternary in most of the river valleys of Belgium.

These valleys are often marked by three terraces: the upper terrace, about 90 meters above the present water-level, of Pliocene age; the middle terrace at an elevation of from 25 to 65 meters, and the lower terrace a little above flood water-level, both of Quaternary age. One would expect to find the first Quaternary industry in the stony deposit (*caillouti*s) that forms the base of the middle terrace in regions not covered (and the regions in question were not) by the Continental ice-sheet. This deposit marks the very close of the Pliocene, but the flints contained in it were utilized at the beginning of the Quaternary and before the superimposed beds were formed.

The accompanying section (figure 16) of the valley of the Lys south of Ypres shows the three terraces and the disposition of the various Pliocene, Quaternary, and recent deposits. Eoliths were found in deposit G. To the industry occurring in deposits of this age, Rutot has given the name Reutelian, from the hamlet of Reutel, to the east of Ypres, where a typical station on a large scale is to be found. Morphologically, these earliest Quaternary implements resemble in every respect the more ancient Tertiary eoliths. The name Reutelian, therefore, is to be understood as having a stratigraphical significance only.

The Reutelian industry varies lithologically according to the varying character of the material utilized. In West Flanders, for example, nodules of grayish black flint coming from the Cretaceous outcrops on the height of Artois were used exclusively. These

nodules were easily transformed into anvil- and hammer-stones, while natural flakes served as scrapers. There is no evidence that nodules were purposely broken up to obtain artificial flakes, the supply of natural ones being quite plentiful at first.

Reutelian implements have been found not only in stratigraphic section, but also on the surface of the soil where denudation has left the deposits in question exposed; and this is especially true of gently sloping hillsides facing the southwest, from which direction

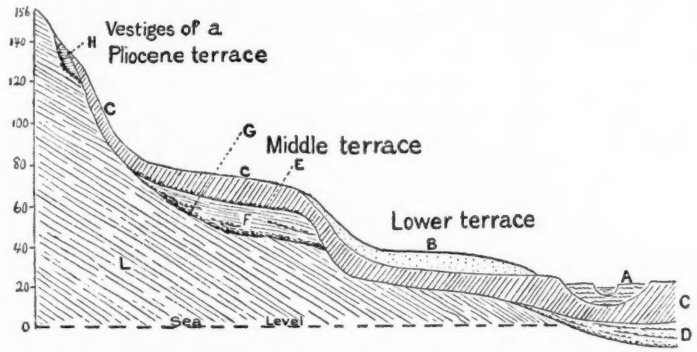

FIG. 16. — Section of the valley of the Lys to the south of Ypres, showing the three terraces and the disposition of the Pliocene, Quaternary, and recent deposits (after Rutot). *A*, Recent alluvium (sand, clay, peat). *B*, Marine sands of Flandrian age (Upper Quaternary). *C*, Stratified Hesbayan clays (Middle Quaternary). *D*, Campinian alluvium; argillaceous sand and gravel with fauna of the Mammoth (Middle Quaternary). *E*, Flinty layer at the top of the Mosean with mélange of Mesvinian and Chellean industries. *F*, Mosean alluvium (Lower Quaternary). *G*, Flinty layer forming the base of the middle terrace (Reutelian industry). *H*, Vestiges of a Pliocene terrace. *L*, Marine deposits (Eocene).

come the prevailing winds and rain. So thoroughly has Rutot mastered the problems at issue that it has been possible for him to foretell the locality where a certain industry may be found, simply by consulting his geological maps.

The geographic distribution of the Reutelian industry includes: the valley of the Lys, particularly in West Flanders; the region about Harmignies, east of Mons; both banks of the Haine and its tributaries, from the French frontier to Morlanwelz; the valley of the Sambre, 25 meters and upward above the river bed, especially

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in the neighborhood of Landelies, also at Tamines, Floreffe, and finally at Salzinnes, near the confluence of the Sambre and the Meuse; the valley of the Meuse to the south (at Wépion) and east of Namur; sparsely in Limburg, but over a large area; and in the extreme east, near Spa. The same industry has already been found in France at Guise, valley of the Oise; Bicêtre, near Paris; and Saint-Prest near Chartres, valley of the Eure. Dr Hahne's recent discoveries at Schönebeck, in the valley of the Elbe, seems to prove the presence of Reutelian implements in Germany.

Industrial remains have also been found in the stony deposits that form the base of the lower terrace in non-glaciated regions — deposits synchronous with the retreat of the first Quaternary glacier, while the Reutelian epoch corresponds with the advance of the same glacier. The implements found at the base of the lower terrace do not differ technologically from the Reutelian eoliths. The only difference is in their stratigraphic relations. A good example of their occurrence is to be found in the quarries of Maffle, near Ath, valley of the Dendre (figure 17); hence the name Mafflean suggested by Rutot for this epoch. It has also been styled Reutelo-mesvinian, a name suggested by its transitional position between the epoch which precedes, and the one which follows, called the Mesvinian.

The geographic distribution of the Mafflean or Reutelo-mesvinian industry is not nearly so extended as that of the Reutelian. It is confined to the lower valley terraces, and only to those that contain utilizable material. The principal Reutelo-mesvinian stations of Belgium are: Maffle, valley of the Dendre; the environs of Binche, valley of the Haine; Quiévrain, Baisieux, Audregnies, etc., valley of the Hogneau; the environs of Charleroi, Aiseau, Tamines, etc., valley of the Sambre; Wommersom, valley of the Grande-Geete, and Saint-Symphorien, Spiennes, etc., valley of the Trouille.

The specimens figured in plate XXVII, A, are natural flakes of phthanite, each provided with a sharp margin at right angles to the opposite, tapering end, or natural handle. In both cases, the once sharp margin has been dulled by use as a scraper. They are from the base of the Mosean (Lower Quaternary) in the Exploitation Hardenpont, at Saint-Symphorien, east of Mons, where the industry is unmixed with that of any other epoch.

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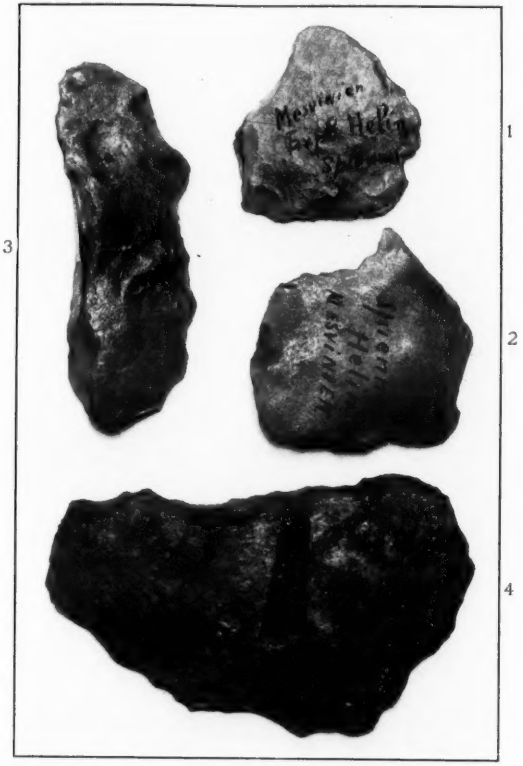
Photo by G. G. MacC.

A. Saint-Symphorien, near Mons (p. 446)



B. Exploitation Helin, near Spiennes (p. 462)

EOLITHS FROM BELGIUM (ABOUT THREE-FIFTHS NATURAL SIZE)

It is interesting to note that M. Cels was the first to call attention to the existence of chipped flints at the base of a lower terrace, viz: the works between Spiennes and Saint-Symphorien, known as the Exploitation Helin, to which station we shall have occasion to refer at length. This was in 1888, when the knowledge of Quaternary geology, as well as of eoliths, was scarcely more than a blank; hence Cels' observations[1] attracted little attention save opposition from the geologists.

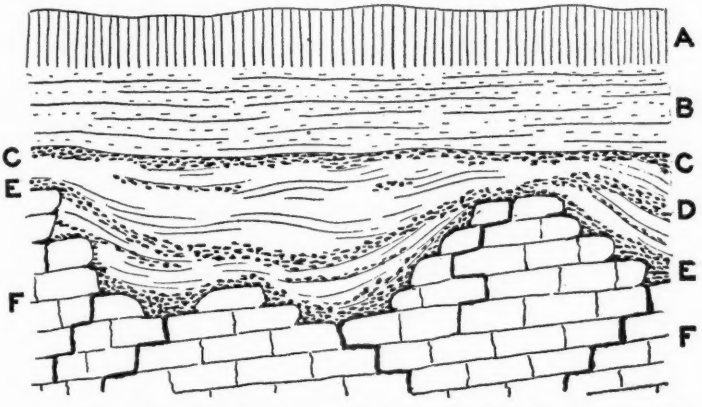


FIG. 17. — Section of the lower-terrace Quaternary deposits in the quarries at Maffle, near Ath, valley of the Dendre (after Rutot). *A*, Brick-earth, summit of the Flandrian. *B*, Stratified, sandy clay, the so-called ergeron of the Flandrian. *C*, Flinty layer at the summit of the Mosean, with many utilized pieces of flint and phthanite (Mesvinian industry). *D*, Mosean fluvial sands with stony layers (utilized pieces of flint and phthanite). *E*, Flinty layer, base of the Mosean (Reutelo-mesvinian or Mafflean industry). *F*, Carboniferous limestone.

The Reutelo-mesvinian, as might be expected, is found at the base of the lower terraces in France. La Fère, valley of the Oise, is a typical station. The gravel pits in the lower terraces about Paris (Billancourt, Chelles, Cergy, etc.) have yielded specimens of this class, mixed, however, with those of the succeeding Mesvinian and Chellean epochs, the mixture being due to the disturbed character of the drift deposits. The Mafflean industry occurs in its purity at Erith, valley of the Thames. Here the immediately overlying stratified sands con-

[1] *Bull. Soc. d'anthr. de Bruxelles*, VI, 156.

tain remains of Elephas antiquus and freshwater- and land-shells, including Corbicula fluminalis. Two stations in Germany also deserve mention — one in the valley of the Elbe, the other at Taubach, near Weimer.

In Belgium there is no trace of glacial action properly so called — no moraines, no bowlder clay. All the Quaternary deposits of Belgium, then, are either marine or fresh-water with the exception of a single bed of probably eolian origin. Belgian Quaternary may be easily divided into five series of deposits. Beginning with the oldest, these are: (1) Mosean, (2) Campinian, (3) Hesbayan, (4) Brabantian, (5) Flandrian.

The Mosean consists of a marine and a continental facies. The fauna of the lower marine deposits closely resembles the present marine fauna of the Belgium coast. The upper layers of the marine facies have furnished remains of the Bison, Cervus, Elephas antiquus, Rhinoceros merckii, and Hippopotamus major.

The Campinian deposits are fluvial gravels and sands with cross stratification, localized in the bottom of valleys. They are often rich in remains of Elphas primigenius, Rhinoceros tichorhinus, Equus caballus, Ursus spelæus, Felis spelæa, Megaceros hibernicus, Bison europæus, etc.— the so-called fauna of the Mammoth.

The Hesbayan stratified clays, 20 to 30 meters thick, and covering the greater part of Belgium, are never ossiferous. The only fossils are: Helix hispida, Succinea oblonga, and Pupa muscorum, none of which is characteristic of the Hesbayan.

Brabantian is a name new to geology, employed for the first time by Rutot, and dating from the year 1900. The term represents the period of desiccation following the deposition of the enormous Hesbayan beds. It designates the pulverized, non-stratified clays, eolian in character, and derived from the Hesbayan clay mantle. These are found notably in Brabant, and are never fossiliferous.

The Flandrian, the last division, like the Mosean, has both a marine and a continental facies. The fauna of the marine facies is analogous to that now living on the coast of Belgium. Of the two continental layers, the lower consists of stratified sands and clays (ergeron), and the upper is composed of brick-earth. The fauna of the continental deposits is confined to the lower layer (ergeron), and

consists solely of the shells already mentioned under the Hesbayan, viz.: Helix hispida, Succinea oblonga, and Pupa muscorum.

All these Quaternary deposits have been carefully examined by Rutot in a search for industrial remains. The Mosean beds are divided into four layers: (1) Lower gravels, (2) Stratified sands and gravels, (3) Loam, and (4) Upper gravels. The lower Mosean gravels occur at the base of the middle terrace and also in the lower terrace. In the middle terrace they contain the Reutelian industry; and in the lower terrace, the Reutelo-mesvinian. The industry of the second layer, stratified sands and gravels, when present, is Reutelo-mesvinian. The loam is generally destitute of implements, while those of the upper Mosean gravels, by reason of their stratigraphic position, are placed in a class by themselves, to which is given the name Mesvinian — a term first employed by M. Émile Delvaux to describe the rude implements found in the railway cut at Mesvin, between Mons and Harmignies.

The Mesvinian industry, then, occurs in deposits that cover the Mosean loam of the middle and lower terraces of valleys in non-glaciated regions, and, according to Rutot, is synchronous with the beginning of the first phase of the second Quaternary glacier. This industry is still of the purely eolithic type, the only novel feature being a notable increase in the percentage of flakes obtained by artificial means — an increase due to the scarcity of natural flakes in these particular deposits.

The geographic distribution of the Mesvinian is quite extensive. In addition to the well-known stations at Mesvin, near Mons, and the Exploitation Helin, at Spiennes, also near Mons, it occurs in the middle terrace of the valley of the Lys and the lower terrace of the valley of the Dendre. Many stations have been uncovered in the valley of the Haine and its tributaries, at Quiévrain, Saint-Symphorien, and Haine-Saint-Pierre, through recent activity in the production of phosphate of lime. Two other localities worthy of mention are in the valley of the Sambre — at Aiseau in the lower terrace and at Salzinnes les-Namur in the upper terrace.

At least two Mesvinian stations are known in England — at Erith, valley of the Thames, and at Chacely, near Tewkesbury, valley of the Severn — each in a lower terrace. In France, the

same industry is to be found in the upper terrace at Saint-Prest and Amiens; also at Chelles and Cergy. To these may be added Germany's contribution from Rixdorff and from Britz and Rudesdorff, near Berlin. Rutot places also in this category the chipped flints recently discovered by Dr G. Schweinfurth at Thebes.

The present valleys were begun during the Middle Pliocene. They were cut deeper during the Upper Pliocene. With the Lower Quaternary or Mosean, the cutting was localized between the upper and middle terraces. The maximum erosion was reached with the Campinian, or first phase of the Middle Quaternary. The valleys were subsequently filled to the extent of 15 to 30 meters in some instances. It is near the base of the Campinian that Rutot has found what he considers to be the transition from the Mesvinian to the Chellean — in other words, the transition from the eolithic to the paleolithic period. This transition epoch, called by Rutot the Mesvino-chellean, is important from the point of view both of stratigraphy and technology, and represents the turn in the tide of the affairs of primitive man. It means that the eolithic period did not close with the Tertiary, as de Mortillet believed, but that it continued on through the Lower into the Middle Quaternary, as Rutot has proved.

A good example of the character of the evidence on which Rutot's classification rests is to be had in the Exploitation Helin, at Spiennes, near Mons. The industry-bearing Campinian beds hitherto studied had been fused into one, in which were found a mélange of flint chips resembling eoliths, of flint nodules only slightly shaped into rude amygdaloid forms, rude Chellean implements with base formed by reserving the nodular crust, as well as the classical Chellean and Acheulian types. Were these all various manifestations of one and the same industrial epoch; or did they represent the successive steps in a gradual industrial evolution? The answer to this question depended on finding the layers separated stratigraphically, a condition that was known to exist at the old Exploitation Helin, phosphate works at present owned by the Société de Saint-Gobain.

By permission of the proprietors and authorization of the director of the Royal Natural History Museum, Brussels, a thorough

investigation of the complete section was made in October, 1902, under the personal direction of Dr Rutot. Beginning at the bottom, the section (figure 18) shows the following:

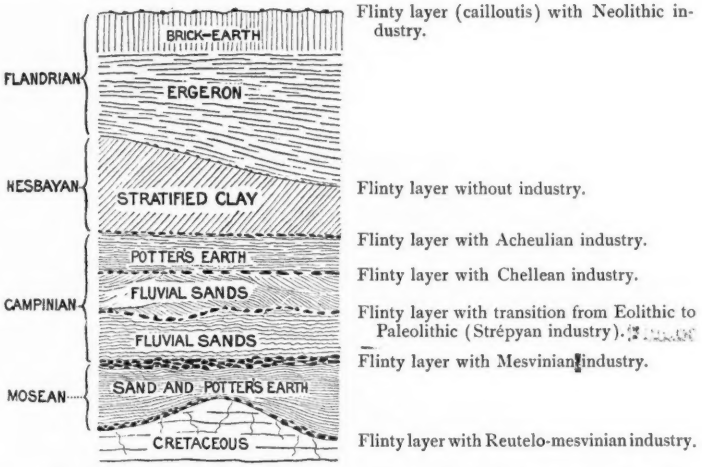


FIG. 18. — Section of the Exploitation Helin, near Spiennes, showing the superposition of the Quaternary deposits; lower terrace of the valley of the Trouille (after Rutot).

1. Stony deposit at the base of the Mosean resting on the Chalk and containing a pure Reutelo-mesvinian industry (the Exploitation Helin is in the lower terrace of the Trouille valley).

2. Fluvial clays and sands, without industry.

3. Stony layer at the summit of the Mosean, with pure Mesvinian industry.

4. Stratified fluvial sands that in neighboring pits have furnished remains of the mammoth.

5. A thin, irregular, flinty layer with the transition industry, Mesvino-chellean.

6. Fluvial sands irregularly and obliquely stratified.

7. A horizontal flinty layer, with the well-known Chellean type of implement.

8. Regularly stratified loam, with traces of vegetable earth at the top.

9. A very thin flinty layer, with typical Acheulian industry.

10. Hesbayan clays.

11. Thin flinty layer, without industry.
12. Stratified sands and clays (ergeron).
13. Brick earth.

It will be seen that all five divisions of the Quaternary, with the exception of the Brabantian which is above the eolithic zone, are represented in section at the Exploitation Helin. All of the Quaternary eolithic epochs are likewise represented here with the exception of the oldest, the Reutelian.

But Rutot's attention was centered on the three separated industry-bearing Campinian layers. Would they each furnish one of the several elements composing the industry already found elsewhere in disturbed Campinian deposits? They did. The lowest of the three (layer no. 5) contained not only eoliths of the Mesvinian type, but also rude implements roughly amygdaloid in shape, selected flint nodules only slightly chipped to a semblance of the hache type, or the poniard. It thus answers all the requirements of an industry of transition between that of the Mesvinian level (no. 3) and that of layer number 7, where Rutot found the classical "*coup de poing*." In the uppermost of these three layers (no. 9) were specimens of the amygdaloid and hache types, carefully chipped on both sides until the margins presented almost a straight line as opposed to the zigzag margin of the Chellean implement — in other words the so-called Acheulian industry of M. d'Ault du Mesnil and the French school.

These Campinian bands consist almost exclusively of blocks of flint and artificial flint chips. They form what is known in England as paleolithic floors. These floors had been so little disturbed that both Rutot and M. É. de Munck were able to replace numerous flakes on their respective cores, building up in this manner the original flint nodules once more. All the edges of the flakes were as sharp as they would be had the chipping been done only yesterday.

The importance of the discovery of a transition industry between the eolithic period representing a low plane of mentality reflecting practically no industrial development, and the paleolithic period, signalized by a gradual evolution both mechanical and mental, cannot well be overestimated. The data gathered at the Exploitation Helin might not of themselves suffice to establish the existence

of a transition stage ; but when supplemented by the rich finds along the right bank of the Haine between Estinnes and Cronfestu, notably at Strépy, Maurage, Trivières, and Saint-Vaast, the cumulative evidence is irresistible. The industry, in fact, is so abundant and characteristic at Strépy as to justify Rutot's proposal of the name Strépyan for the transition epoch, in place of the longer term Mesvino-chellean.

The Exploitation Helin, with its separated, industry-bearing, Campinian layers, is the key to the passage from the eolithic to the paleolithic period. It furnishes the solution of the problem of the mixed industries occurring at various localities along the northern shore of the Haine, particularly at Strépy. These localities, on the other hand, have furnished the transition industry in far greater quantities and variety of form. The gently sloping valley facing the southwest being exposed to the prevailing winds and rainstorms, the beds of clay have disappeared. The result is that two of the flinty layers are fused into one. The probability of a mixture of industries was suggested by the fact that two kinds of flint were utilized : (1) small nodules of a green-coated brown flint, and (2) flakes artificially removed from large nodules of beautiful black flint. By placing in one group the artifacts of brown flint, and in another those of black flint, Rutot discovered that he had by that act separated two industries as perfectly as they had been separated in the section at the Exploitation Helin. There were, for example, no carefully fashioned implements of the Acheulian type among the brown flints, and no rude Chellean implements among the black flints.

The almost incredibly rich finds made at Strépy and neighboring localities have served to shed new light on the uses to which the artifacts were put. The first unmistakable weapons are placed by Rutot in the Strépyan (transition from the eolithic to the paleolithic). The eoliths are tools and not weapons, with the possible exception of the small fling-stones, and these were evidently not weapons of defense, being used only in the chase.

The transition industry includes hammer-stones, scrapers, and punches, all of which retain eolithic facies while undergoing a gradual evolution in form. To these may be added an entirely new

series of implements more or less amygdaloid in shape, i. e., the primitive Chellan "*coup de poing*."

Rutot's ingenious theory as to the origin of the amygdaloid type of implement is given here, because of its plausibility and because I had arrived, independently, at the same conclusion after a careful study of the transition series belonging to the Yale Museum. The primitive stage is the rather flat flint nodule, with more or less rounded contours, such as would attract one in search of a hammer-stone. With use, small chips would be detached from a section of the contour. Some would be removed from one face, and some from the other, as the aim veered to the right or to the left as the case might be. This would result in an irregular, zigzag edge for which uses might easily arise. By bringing an adjacent section of the contour into play as a hammer-stone, the zigzag edge could be extended indefinitely. The specimens show that, in practice, it was wise to reserve the original handhold.

An excellent example to illustrate the hammer-stone origin of the almond-shaped paleolithic may be seen in figure 2 of plate XXVIII, B. The implement, which comes from Bray, valley of the Haine, is a flint nodule with smooth exterior. About one-half has been reserved for the handle. The borders of the other half are chipped and battered by hammer-like blows. The flakes removed being blunt, the thickness of the nodule toward the center is not reduced, and the worked edges are, in consequence, quite blunt. From the accidental chipping of a hammer-stone in use to further intentional chipping and retouching, with a view of rendering the original nodule flatter and its edges straighter and sharper, is but a step, and that step was taken as soon as its utility became evident.

The amygdaloid implement serves equally well as a hatchet or a poniard, and is, therefore, an excellent all-round weapon. In the meantime, a veritable poniard was in process of development. It was evolved from the sub-cylindrical flint nodule. A few well-directed blows at one extremity, and the poniard was ready for service. Its greater length, better handhold, and sharper point rendered it more effective for thrusting purposes than was the composite amygdaloid implement. Of the two hundred or more rude, flint poniards in the Brussels collection, some have very serviceable,

natural guards, the maker having selected a nodule with an enlargement at the proper place — a further step in the differentiation between the hilt and blade.

Perhaps no better intermediate form between the amygdaloid type and that of the poniard could be found than the two specimens illustrated in plate XXIX, A. They are enough alike to have been made by the same workman. Figure 1 is from Milton Street, about 100 feet above the Thames and near the base of Swanscombe hill (figure 15). Figure 2 is from the Shelly gravel-pit at Swanscombe, which is very near Milton Street and at approximately the same level above the Thames. Both were given to me by Mrs Stopes, whose husband, the late Henry Stopes, found them in 1900. Each is simply a sub-cylindrical nodule, chipped at one end to a blade-like, rather sharp, edge. The patina of the chipped surfaces is especially rich and glossy. The specimen from Milton Street is provided with a natural hilt that fits the hand perfectly and is more suggestive of the poniard than of the strictly Chellean type.

The implement from the Shelly gravel-pit at Swanscombe has no differentiated hilt, but the blade near the point is chipped so thin as to make it admirably adapted for use as an instrument of thrust. It was associated with a comparatively rich fauna, including Elephas antiquus, Elephas primigenius and Corbicula fluminalis.

The mixed character of the fauna, as well as of the industry, leads me to believe that the industry of the Shelly gravel-pit at Swanscombe represents both the eolithic and the paleolithic.

The section of the pit that has yielded so many fossils and stone implements is described by Mr Stopes as "stratified sands and gravels, capped by a thin layer of tough clay." The Shelly bed is 10 feet thick, and rests upon the Chalk at a level of 78 feet above the sea. In it were found the implements also; but whether at a single level or at various levels is not stated.

I have compared a list of the Shelly gravel-pit[1] fauna with those furnished by Rutot for the deposits at Erith and Menchecourt, each in a lower terrace; and that by Laville for Cergy, also in a lower terrace, only 7 meters above the mean water-level of the Oise. The results are as follows:

[1] Mrs Stopes in *Report Brit. Assoc. for the Adv. of Science*, Southport, 1903.

MAMMALIA.	
Cervus elephas,	Swanscombe, Erith, Menchecourt.
Elephas antiquus,	Swanscombe, Erith, Menchecourt, Cergy.
Elephas primigenius,	Swanscombe, Erith, Menchecourt, Cergy.
Equus caballus,	Swanscombe, ... Menchecourt, ...
Rhinoceros leptorhinus,	Swanscombe, ... Cergy.[1]
Sus scrofa	Swanscombe. ..... Menchecourt, Cergy.
MOLLUSCA.	
Carychium minimum,	Swanscombe, ... Cergy.
Helix nemoralis,	Swanscombe, ... Cergy.
Limnæa auricularia,	Swanscombe, ... Cergy.
Limnæa peregra,	Swanscombe, Erith, ...
Limnæa palustris,	Swanscombe, Erith, ...
Planorbis spirorbis,	Swanscombe, Erith, ... Cergy.
Bithinia tentaculata,	Swanscombe, Erith, Menchecourt, Cergy.
Valvata piscinalis,	Swanscombe, Erith, ... Cergy.
Valvata cristata,	Swanscombe, Erith, ...
Unio littoralis,	Swanscombe, Erith, ...
Corbicula fluminalis,	Swanscombe, Erith, ... Cergy.
Sphæricum corneum,	Swanscombe, Erith, ...
Pisidium amnicum,	Swanscombe, Erith, ... Cergy.

Out of 19 selected species from the Shelly gravel-pit at Swanscombe, 13 are found at Erith, 6 at Menchecourt, and 12 at Cergy. The species common to all four stations are: Elephas antiquus, Elephas primigenius, and Bithinia tentaculata; while those common to Swanscombe, Erith, and Cergy, would increase this list by Planorbis spirorbis, Valvata piscinalis, Corbicula fluminalis, and Pisidium amnicum.

The fauna of Elephas antiquus is characteristic of eolithic horizons; that of Elephas primigenius is preëminently paleolithic in its associations. Bithinia tentaculata and Corbicula fluminalis have a wider range in point of time.

As regards the industrial remains, Mrs Stopes mentions implements of the Acheulian and Chellean types; also discs, fling-stones, scrapers, spoke-shaves, punches, etc., many of them with eolithic facies.

Among the weapons of this transition epoch may be mentioned

[1] Probably the same species.

the *casse-têtes* formed of flint nodules, the natural shapes of which lent themselves readily to such uses. The specimen from Bray illustrated in plate XXIX, B, is an example of this class. The only breaks in the crust of the club-like flint nodule are the two on the side and extremity of the club-end, respectively. At both these places blunt edges have been produced by approximately direct blows. The implement was held like a club to produce the chipping at the side ; and like a pestle to produce that at the extremity.

It was my good fortune to spend eleven days with Rutot during the latter part of July, 1903. Our time was divided equally between Rutot's collections in the Royal Museum of Natural History and the field. The collection, numbering thousands of specimens, was not yet on exhibition, the handsome and commodious new wing of the Museum where it was to be placed not being finished. The installation, however, in M. Rutot's office was such as to render possible a thorough examination, not only of each piece but also of large groups, for comparative study of the various geological horizons.

The careful coördination of museum- and field-work was everywhere evident. Both had been truthfully reflected in Rutot's numerous publications. The latter were already familiar to me, and my object in visiting Belgium was not so much for verification of a master's work as for guidance by that master. My host's first words were: "*Il faut être guidé*," and my experiences for the next ten days proved the truth of his assertion.

We first visited Binche, the headquarters of that veteran collector, M. N. Dethise, and in the course of the day walked as far north as Leval. In the railway cut at Ressaix-Trieu there is an instructive section showing Lower Eocene sands with superimposed Mosean, Hesbayan, and Flandrian deposits. The flinty layer at the base of the Mosean yielded Reutelian implements, and that at its summit both Mesvinian and Chellean implements. As may be seen in the section (figure 19), these two implementiferous layers merge into one where the Mosean fails, thus causing a mélange of industries.

Near the railway station at Leval, the surface of the fields sloping toward the southwest are covered with flints left exposed

through denudation. Here we found an industry representing the transition from the eolithic to the paleolithic. It is one of those gently sloping surfaces facing the southwest, and thus receiving the full benefit of the prevailing winds and rains. The intercalating beds of clay having been washed away, the surface of the field is covered with what has been aptly called *tapis de silex*, resting on an outcrop of Chalk. Here was found the rude poniard figured in plate XXVIII, B, fig. 1. It is a simple nodule of parti-colored flint, with a white crust. One extremity was roughly chipped to a point. Two or three prominences had been removed from the opposite end so as to make it fit the hand comfortably. A single stroke served not only to remove a projection near the base, but also to reduce the circumference at this point, thus tending to

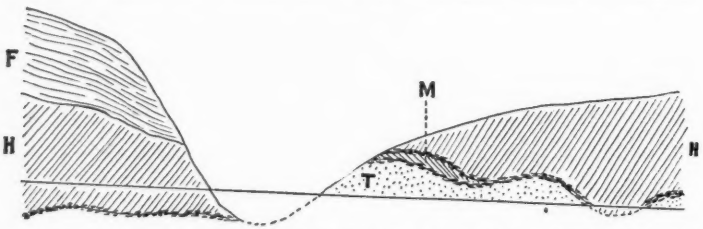


FIG. 19. — Section in the railway cut at Ressaix-Trieu (from a sketch made in the field). *F*, Flandrian (Upper Quaternary). *H*, Hesbayan (Middle Quaternary). *M*, Mosean (Lower Quaternary), with Reutelian implements at its base and Mesvinian and Chellean implements at its summit. *T*, Lower Eocene.

produce a guard. A sharp edge left by the removal of the flake in question was reduced by means of many slight blows or retouches so as not to cut the hand.

We spent another day at Écaussines-Carrières, largely for the purpose of becoming familiarized with the various Quaternary deposits. Perhaps the best section exposed was that in the Thiarmont quarry (figure 20). It shows how the pockets in the old eroded surface of the Carboniferous limestone are filled with Wealden deposits, over which is spread the Mosean. Above the Mosean come, in turn, the Hesbayan (Loess), the Brabantian, Flandrian, and brick-earth. This section shows the contact of the Brabantian clays on the one hand with the underlying Hesbayan mantle, and on the other, with the superimposed Flandrian deposits. Rutot

believes that the Brabantian (eolian) was not an epoch favorable to human existence, and yet there is some evidence tending to show that the Eburnean races penetrated Belgium at that time.

The most interesting excursion of the series was the one to Harmignies, Spiennes, and the Exploitation Helin, near Spiennes, which were reached by way of Mons. There are interesting sections in two railway cuts between Mons and Harmignies. The one nearest Mons, the Mesvin cut, furnished the first eoliths to be found

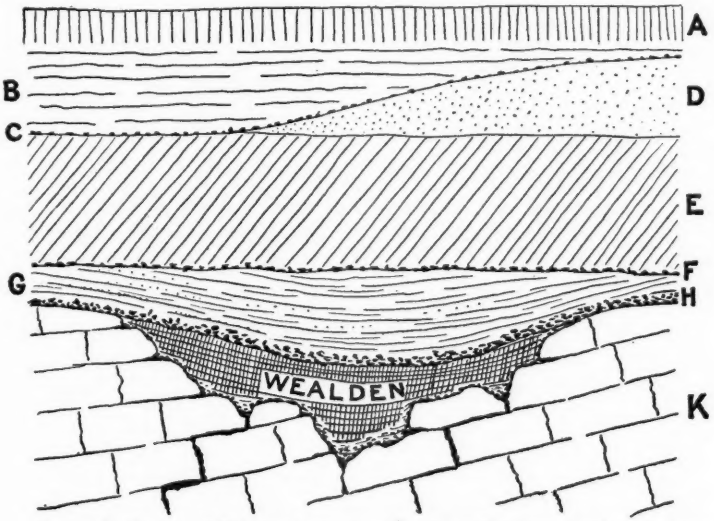


FIG. 20.—Section of Thiarmont quarry at Écaussines-Carrières, forming the lower terrace of the Sennette valley (from a sketch made in the field). *A*, Brick-earth. *B*, Stratified sandy clay ("ergeron"), Flandrian. *C*, Thin flinty layer. *D*, Pulverulent, non-stratified clays of eolian origin, Brabantian. *E*, Stratified clay, Hesbayan. *F*, Stony layer. *G*, Fluvial sands, obliquely stratified, with intercalated seams of gravel, Mosean. *H*, Stony layer with fragments of phthanite. *K*, Carboniferous limestone.

in Belgium, and gave its name to the Mesvinian epoch of the eolithic period. In the other may still be seen the pits sunk in neolithic times to obtain the fresh flint used in the manufacture of chipped and polished implements.

From Harmignies we returned on foot along the railway, by special permission. Leaving the railway at the crossing of the

highway which leads in a northwesterly direction to Mons, we soon reached the level of a middle terrace, 25 and more meters above the bed of the Trouille river. It was here that M. É. de Munck discovered recently a spread of eoliths belonging to the Reutelian epoch.

As the surface slopes gently toward the southwest, the upper layers of the terrace have disappeared, leaving the flinty layer at its base exposed. This layer rests on the Chalk, the surface of which was eroded during Mosean times. Between the sand-filled gullies in the Chalk is found the spread of flints, many of them showing unmistakable traces of utilization. The locality is especially noted for polyhedral fling-stones and hammer-stones, the latter bearing evidence of having seen much service.

After being told where to look, my search was rewarded. The first find was a typical Reutelian hammer-stone (plate XXVI, B, fig. 4), characteristic also of that particular locality, since it bore marks of having been much used. It is a flint nodule that had been but slightly altered by chance flaking before being utilized. Only one of the old surfaces of fracture has been preserved. The rest of the exterior either retains the original nodular crust or has been modified by artificial chipping. One end and one margin are thoroughly battered by use. The crest of the battered margin is zigzag in its course, showing how the chips came off, first on one side and then on the other, due to the uncertainty of landing a blow true with a stone whose transverse diameter is less than half that of the diameter in the same plane with the direction of the blow that is dealt. The other end and margin show no evidence of having given or received perpendicular blows. They were adapted to the hand simply by the removal of a few flakes.

I found several other Reutelian implements before we left the terrace above Harmignies. Only two of these are figured (plate XXVI, B, figs. 1 and 2). Figure 2 is a very interesting specimen. It is a natural flake with a little crust left on the outer surface. The inner surface is weathered white and is in rather sharp contrast with the fresher appearing worked margins. The heel and the greater part of one margin are left untouched. The other margin and the point are carefully retouched. For a part of the way the

worked margin is chipped on both sides. Near the base, or heel, a notch has been carefully retouched, on one side only, to form a scraper of the spoke-shave type. Figure 1 is one of the polyhedral fling-stones, which, like the oft-used hammer-stones, are characteristic of the locality in question. It may be recalled that similar stones were found on the Chalk plateau. A Reutelian scraper (fig. 3) from Bois d'Epinois, valley of the Haine, near Binche, the gift of Dr Rutot, is grouped with the Harmignies specimens for convenience. It is a natural flake of flint, quadrangular in shape, the only sharp margin of which, after being dulled by use, has been retouched with a view to further utilization. The Yale Museum is also indebted to Dr Rutot for a valuable series representing the various eolithic horizons as well as the transition to the paleolithic.

Leaving the Reutelian station above Harmignies, we traversed the famous Champs à cayoux and picked up a number of neolithic implements, including nuclei and flakes. These are from the ancient workshops that once covered an area of more than 120 acres. The locality first came into notice in 1840 through the researches of M. Albert Tolliez. Twenty years later Tolliez discovered that the fresh flint nodules, utilized in the manufacture of implements, came from galleries in the Chalk, reached by means of pits sunk through the Quaternary deposits and Tertiary sands. The discovery was confirmed in 1867, when the new railway from Mons to Charleroi, via Harmignies, was cut through the Champs à cayous, laying bare no fewer than twenty-five of these pits.

Finished implements, as well as those in the rough, nuclei and flakes, have found their way from the sites of these ancient workshops to museums in almost every land. The Yale Museum being an exception, and the supply being not yet exhausted, our collecting bags grew perceptibly heavier before we reached the village of Spiennes and turned northward on our way across fields to the Exploitation Helin, in the direction of Saint-Symphorien.

The section at the Exploitation Helin has been already described (figure 18). Having become somewhat familiar with the aspect of the Belgian series of Quaternary deposits by a study of sections in various localities, notably at Ressaix and in the Thiarmont quarry

XUM

at Écaussines-carrières, I was able to recognize the superimposed beds in the pits of Helin without much assistance from Dr Rutot.

Of the specimens illustrated in plates XXVII, B, and XXVIII, A, some were found by Dr Rutot and some by myself. All are from the flinty layer at the top of the Mosean. The specimens in plate XXVII, B, have been retouched, are slightly weathered, and show marks of wear, in part, no doubt, from use, and in part, it may be, from natural causes. Figure 1 of this plate shows a rather flat, artificial flake with the original greenish crust intact over the outer surface. The margins are carefully worked on both sides of the blunt, beak-like apex. Figure 2 is likewise an artificial flake with prominent bulb of percussion. The two margins that lead to the sharp projection are retouched, but on opposite sides. This reverse working produces a point that might well have been used as a reamer. Figure 3 represents a type of implement common to the eolithic period, but very rare in the paleolithic. It was used to retouch the dulled edges of flint flakes; hence the name *retouchoir* given to it by Rutot. The piece in question is a prismoid flint flake, the thinnest margin of which has been reduced in certain places by use. Figure 4 is an artificial flake that has retained the outer crust. The approximately straight edge is retouched from one side only and along its entire length.

The specimens figured in plate XXVIII, A, are all non-utilized pieces. The surfaces of fracture are perfectly fresh, and the edges and corners are neither retouched nor worn. Figures 1–2 are artificial flakes, and figure 3 is a core from which several flakes have been artificially removed.

It is fitting to close with the Exploitation Helin for two reasons: (1) It contains in undisturbed section all the Belgian Quaternary deposits except one, and that one, the Brabantian, is above the eolithic zone; (2) In its superimposed beds have been found implements representing every eolithic epoch with the exception of the Reutelian, at the bottom of the Belgian series. It is, therefore, of itself the best résumé of the eolithic problem, being, as it is, an epitome of the stratigraphic evidence on which the solution of the question depends so largely. To complete the stratigraphic evidence one has only to turn to the lowest beds of the middle ter-

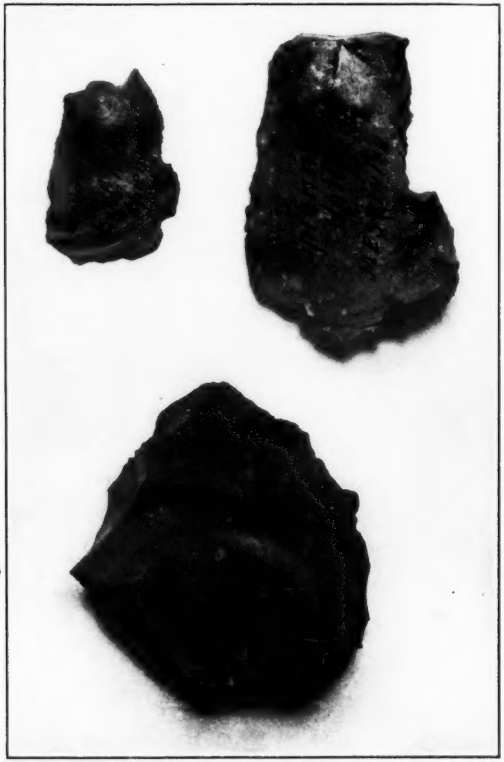
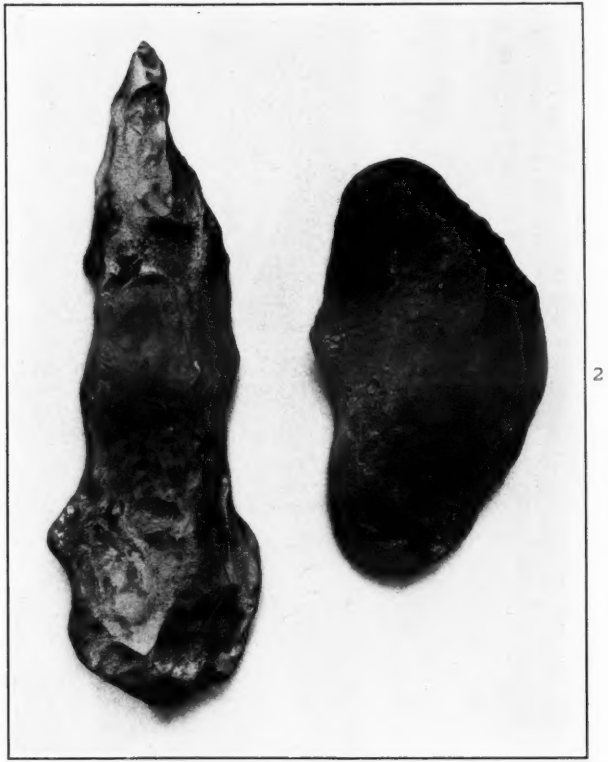


Photo by G. G. MacC.

A. Exploitation Helin, near Spiennes (p 462).



B. 1, Leval (p. 458). 2, Bray, valley of the Haine (p. 454).

EOLITHS FROM BELGIUM (ABOUT THREE-FIFTHS NATURAL SIZE)

races in such sections as that near Ypres, valley of the Lys, or at Salzinnes les-Namur, valley of the Sambre.

But stratigraphy alone is of no avail unless the specimens themselves are recognized as artifacts. The arguments in favor of their acceptance as such have been given at length in discussing the plateau specimens from England. If further evidence along this line be required, the reader is referred to Rutot's papers entitled, "Les actions naturelles possibles sont inaptes à produire des effets semblables à la retouche intentionelle,"[1] and "Sur la cause de l' éclatement naturel du silex."[2] Lack of space renders it impossible to enter here into the details of Rutot's experiments and arguments, proving the inadequacy of the possible, natural, and accidental causes that might be invoked as apt to produce the effect of intentional working. The natural causes are: (1) Change of temperature, (2) torrential action, (3) action of the waves of the sea, and (4) the settling or sinking of the beds in question.

Prestwich had also given this subject much attention. His chief reasons for believing that the plateau specimens could not have been shaped by natural causes were: (1) That they admit of arrangement into definite groups based on form; (2) the parallelism of the flakes struck off is the result of intention and not of accident; (3) many of the forms are suggestive of definite uses as tools and implements; (4) the character of the work is the same for those of which the uses appear obscure. But the advocates of the artificial nature of these specimens are not called on to find a use for every type of implement. We are reminded by Abbott that if the only boomerangs in existence were fossil boomerangs, it would take an expert guesser to hit upon the use to which we happen to know they are put. So certain was Prestwich in his exclusion of natural-cause theories, particularly the effects of wave-action, that he offered the two volumes of his *Geology* for half a dozen shore flints (not derived) of any of the plateau types figured in plates V to IX, of his "Collected Papers on some Controverted Questions of Geology."

Mr W. J. Lewis Abbott, himself an expert judge of precious and semi-precious stones, has experimented much in the working of

[1] *Bull. et mém. Soc. d'anthr. de Bruxelles*, 1902, XX.

[2] Ibid., 1904, XXIII.

flint, and knows, as well as any one, the limitations imposed on the range of effects produced by natural or accidental causes. One of the implements he found in the Elephas deposits of the Cromer beds showed "a well marked *éraillure*." He has made "thousands of experiments of fixing flints and pitching round pebbles at them, and thus removing flakes." He adds: "By special suspension arrangements, I was able to administer any number of blows at any particular spot with various degrees of force; but I was never able to produce this scar (*éraillure*) in any way in which it may be conceived Nature worked." Another set of experiments included the placing of flints, fixed and otherwise, at the bottom of a long, inclined trough and letting stones slide down upon them; but "always with a negative result." On the other hand, when he has "tried to make a clean chop off a mineral," he was always "annoyed by a characteristic kick, giving rise to the *éraillure*." Abbott explains that when one wishes to deal a blow in a definite direction and in a given spot, the concentration of muscular power to land the blow on "that particular spot, and even to keep the hammer there," occasions a secondary blow, produced by the voluntary muscular opposition to the rebound. The same phenomenon results when one attempts to drive a nail in an awkward place by a series of deliberate blows, each of which will be followed by a second, involuntary tap. It is this tap that removes the small flake from the bulb of percussion and produces the well-known *éraillure*. This, Abbott considers of more importance than the bulb of percussion itself, and indubitable proof of an intentionally directed blow. The bulb of percussion on one of the non-utilized artificial flakes (plate XXVIII, A, fig. 2) from the Mesvinian level in the Exploitation Helin is marked by a characteristic *éraillure*.

The recognition of eoliths as artifacts, and the determination of the geological horizons where they are found *in situ*, pave the way to the development of systems of relative chronology and a special terminology. I have referred already to the de Mortillet system (page 426) which provided for an eolithic period. But I have endeavored to show that priority in the use of that term belongs to Mr J. Allen Brown — a fact in the history of the science worthy of emphasis, especially since the credit is generally given to de Mortillet.

Rutot, for example, says:[1] "Le mot servant à caractériser l'idée, si importante, de l'existence de toute une longue série d'industries primitives antérieures au Paléolithique est trouvé depuis longtemps, et c'est G. de Mortillet qui, croyons-nous, l'a proposer le premier, c'est le mot éolithique." Another author has made the same mistake in an important work that appeared only this year. M. A. Doigneau, whose book[2] I reviewed for the *American Anthropologist*,[3] says: "On accepta définitivement le nom de Éolithique (aurore de la pierre) déjà précédement proposé par G. de Mortillet, pour désigner l'époque qui précéda celle de Chelles et pendant laquelle naquit l'industrie de la pierre." My statement (on page 426) of J. Allen Brown's claims to priority was written before the two works of Rutot and Doigneau, respectively, were published; which is my reason for emphasizing it here.

De Mortillet's provisions for an eolithic period were so meager and uncertain that little except an historical significance attaches to them now. It could hardly have been otherwise. The wonder is that he built so well, working almost wholly in the dark and against the dominant views of his time.

Rutot profited both by the successes and the failures of his forerunner. His system, which covers all the periods of the stone age, is reproduced in extenso. Attention is directed particularly to the part dealing with the eolithic period, which is preëminently his own and which was built up gradually in the light of long and painstaking investigations. I have added the Dewlish industry to his classification, associating it with that of the Cromer Forest-bed and Saint-Prest. Archibald Geikie[4] is my authority for placing the Dewlish gravels with the Cromer Forest-bed group. Both are referred to the same horizon in the Upper Pliocene, and both are estuarine and fresh-water deposits. Thus the synchronism between the industrial remains found by Abbott near East Runton, Norfolk, and those taken by Dr Blackmore from the Dewlish gravels, in Dorset, is established.

[1] Le préhistorique dans l'Europe centrale. Extrait du *C.-R. du Congr. d'archéol. et d'hist.*, Dinant, 1903, p. 244.

[2] *Nos ancêtres primitifs*, Paris, 1905, p. 36.

[3] Vol. VII, 1905, p. 120.

[4] *Text-book of Geology*, 4th ed., 1903, p. 1281.

System of Chronology for the Stone Age

(Adapted from Rutot)

		Recent			Neolithic	*Present Fauna.*	Robenhausian. Campignian and Tardenoisian. Tourassian.
Quaternary		Fourth Glacial Period	Retreat.	Eolithic Period	Paleolithic Period	*Fauna of the Reindeer.*	Tarandian Industry.
			Advance.				
		Third Glacial Period	Retreat.			*Fauna of the Mammoth (Elephas primigenius).*	Eburnean Industry.
			Advance.				
		Second Glacial Period	Retreat.				Mousterian Industry.
			Advance.				Acheulian Industry. Chellean Industry. Mesvino-chellean or Strépyan Industry (Strépy, Belgium).
		First Glacial Period	Retreat.			*Fauna of Elephas antiquus.*	Mesvinian Ind. (Mesvin, Belgium). Reutelo-mesvinian or Mafflean Industry { Maffle near Ath, Belgium.
			Advance.				Reutelian Industry (Reutel, Belgium).
Tertiary	Pliocene		Upper.			*Fauna of E. meridionalis*	Ind., Cromer Forest Bed (Norfolk). Industry of Dewlish (Dorset). Industry of Saint-Prest (France).
			Middle (Glacial.)				Industry of the Chalk Plateau (England).
			Lower.				
	Miocene		Upper.			*Fauna of Dinotherium*	Industry of Puy-Courny (France).
			Middle Lower.				
	Oligocene		Upper.			*Fauna of Acerotherium*	Industry of Thenay? (France).
			Middle Lower.				
	Eocene						

Photo by G. G. MacC.

A. 1, Milton Street, Kent (p. 455). 2, Shelly gravel-pit, Swanscombe Kent (p 455). B. Bray, valley of the Haine, Belgium (p 457).

EOLITHS FROM ENGLAND AND BELGIUM (ABOUT THREE-FIFTHS NATURAL SIZE)

Rutot has more recently attempted to adapt a time-scale, based on the measure of the advance and retreat of glaciers, to his system of epochs. The values of that portion dealing with the divisions of the eolithic period are as follows:

Reutelian epoch	25,000 years.
Mafflean "	12,500 "
Mesvinian "	12,500 "
Strépyan " (transition)	5,000 "
Paleolithic period	84,000 "

The above estimate would give 139,000 years as the duration of the Quaternary, a figure not considered excessive in the light of various estimates placed on the duration of the earlier geologic periods.

Conclusions

A study of the Rutot classification renders needless anything more than the briefest summary. We have endeavored to give the problem a setting such as would bring into relief its nature and import. While in reality the first of the stone-age periods, the eolithic is the last to receive recognition.

To be readily acceptable, an idea must not run counter to prejudice. It must be stated with clearness and authority and at the right time. The right time does not mean after there is no longer prejudice. It means rather the moment that the originator of the idea is able to find one, or, better, several advocates who can speak with an authority equal to his own. In Law the truth is not established by the mouth of one witness only. Similar safeguards should protect a growing science.

The idea of a primitive industry antedating the Chellean was proclaimed not only at a time when it ran counter to prejudice, but also before it could be stated with clearness and authority. The importance of the Abbé Bourgeois's discoveries at Thenay in 1867 are still open to question; but the measure of his prophetic vision finds abundant expression in present-day fulfilment. Bourgeois supposed that he had found artifacts in the Oligocene. He may have been mistaken. It did not matter much, so long as his attempt inspired further effort. Rames came along later and did find artifacts in the Upper Miocene at Puy-Courny. Before Rames

made known his discovery, Harrison had begun to find worked flints on the North Downs of Kent; so that the time to speak the word of authority was to come with Rutot's lucid presentation of the combined evidence, based on stratigraphy, paleontology, and technology.

The importance, then, of verification cannot be too strongly emphasized. But there are two kinds of verification: that which is done by a third party and that which one does himself. Personal verification is, naturally, the most convincing. To make this supreme test before passing judgment on so important a question, I spent considerable time both in Belgium and in the South of England.

The question does not admit of profitable study in any other way. My opinion, based on personal experience, is given simply as such. It is that the existence of a primitive industry, antedating what is commonly accepted as paleolithic, has been established. This industry occurs as far back as the Upper Miocene and continues on through the Upper Tertiary into, and including, the Lower Quaternary. The distinguishing characters of the industry remain but little changed throughout the entire period, the subdivision of the period into epochs being based on stratigraphy and not on industrial characters. The requirements in the way of tools being very simple and the supply of material in the way of natural flakes and fragments of flint being very plentiful, the inventive powers of the population remained dormant for ages. Hammer and knife were the original tools. Both were picked up ready-made. A sharp-edged, natural flake served for one, and a nodule or fragment served for the other. When the edge of the flake became dulled by use, the piece was either thrown away or the edge was retouched for further use. If hammer or flake did not admit of being held comfortably in the hand, the troublesome points or edges were removed or reduced by chipping. The stock of tools increased slowly with the slowly growing needs. As these multiplied, and the natural supply of raw material diminished, the latter was supplemented by the manufacture of artificial flakes. When the lesson of associating definite forms of implements with definite uses was learned, special types arose, notably the amygdaloid implement and

the poniard. Then came the transition from the eolithic to the paleolithic, a stage that has been so thoroughly investigated by Rutot.

Finally, in the preparation of this paper, I was enabled to settle a question of priority by discovering that it was J. Allen Brown, and not Gabriel de Mortillet, who first proposed the name "eolithic."

The appended bibliography is far more complete than any other that has been prepared on this subject, the number of listed papers and references reaching a total of 154. The only other serious attempt at a bibliography was made by the Rev. R. Ashington Bullen in 1903, and includes 51 titles.

Argument, evidence, demonstration, are mental stimuli, the potency of which varies with the individual. That which serves to convince one, may not have the slightest effect on another. If the credulous are over-sensitive, the incredulous are certainly the opposite. In neither case is the argument necessarily at fault.

To the minds incredulous on the subject of the reality of an eolithic industry, my advice is: Do as Capitan, Klaatsch, Schweinfurth, and others, including myself, have done. Examine the Rutot series in Brussels, methodically collected and classified. Listen to Rutot's own story supplemented by demonstration with specimens; then go with him to the field. No one could be more patient, more obliging, more helpful. But you would probably lose sight of these traits, momentarily at least, through the pervasive enthusiasm of their possessor and the force and logic of the demonstration. One day in the field may suffice. It may require several. If not convinced finally, you will be the first exception to the rule.

The subject, however, is not so simple as might be supposed. Even exhaustive series of specimens, systematically arranged and carefully labeled, are cold, dry, and lifeless until a living soul breathes into them the breath of life. Rutot sent a very instructive series to the Louisiana Purchase Exposition at St Louis.[1] Unfortunately he was not there to interpret them. What impression they made, even on those accustomed to study stone artifacts, remains to be seen. It is a pleasure to be able to record that, at the

[1] A grand prize has been awarded to the Brussels Museum of Natural History for the Rutot series. (See *Amer. Anthropologist*, 1905, VII, 161, "Classified Relics.")

close of the Exposition, the collection was sent as a gift to Prof. F. W. Putnam of the Peabody Museum, Harvard University.

Only the other day a professor of anthropology in one of our leading eastern universities asked me if I was acquainted with Rutot's publications on the eolithic question. When answered in the affirmative, he further inquired, "Can you make anything out of them? I can't." I had to confess that they puzzled me also at first; but that having found the key, every difficulty had suddenly disappeared. "And the key?" "The key is Rutot himself and his environment," was my answer. "Know him, cover with him some, at least, of the ground that he has covered, and the language he speaks will no longer sound strange and unfamiliar."

It is well and even natural that archeologists should become absorbed in local problems. That is, in fact, why Rutot has succeeded in accomplishing so much. It is also well that workers in one part of the world should know and appreciate what is being done in other parts. It takes more than weavers to make a garment. There are also cutters and fitters. A like division of labor obtains among the prehistoric archeologists who should know the figure that must be clothed before they attempt to cut a garment that will fit.

If in the writing of this paper even one of several results is accomplished, I shall feel justified in the attempt, and well repaid for the labor expended. While introducing to Americans certain European authorities, it may also serve the rôle of interpreter, and lead to a better understanding and appreciation of what is being done on the other side of the Atlantic. Again, it may incite some to follow the advice given above and to investigate for themselves a problem the correct solution of which cannot fail to add materially to our knowledge of humankind.

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NOTES ON THE SAN CARLOS APACHE

By ALEŠ HRDLIČKA

INTRODUCTION

During my visit to the San Carlos Apache in 1900,[1] and especially while conducting researches into the physical anthropology of this people during the earlier part of 1905,[2] I embraced the opportunity of making some collateral observations of an ethnologic and archeologic nature. As the San Carlos people and the country occupied by them are but little known to ethnologists, these notes may prove of interest.

The San Carlos Apache occupy largely the rugged country extending southwestward from the White mountains in Arizona, between that part of Salt river known as Black river, and the Gila. This section forms a part of the great White Mountain Apache reservation. The principal settlements are in the valley of the Gila, from the abandoned Fort Thomas to a few miles beyond San Carlos agency, and in the valley of San Carlos creek or river. The people are officially represented as consisting of the San Carlos, Coyotero, and Tonto Apache, and in 1904 numbered 1,718 individuals. They subsist by agriculture or by working for the whites on the railroad, and at mines, the agency, and the schools, while the older members receive rations from the Indian Department. The people in general are peaceable and are advancing toward civilization; they are common-sense and clever, and are less hampered in their progress by aboriginal traditions, beliefs, and observances than other southwestern Indians, notably the Pueblos. The Apache are also industrious, but are still as improvident as Indians generally. Their morals suffer by the proximity of the railroad and mining towns, and especially by lack of restraint on the manufacture among them of *tulipi* (*tesvino*, *tiswin*). This

[1] Under the auspices of the Hyde Expedition for the American Museum of Natural History, New York.

[2] Expedition of the Bureau of American Ethnology.

liquor, made by fermenting corn in a peculiar way,[1] is rendered more intoxicating by the addition of roots, and sometimes by the admixture of the vile whisky sold surreptitiously by the whites. Abuse in the use of this drink is the cause of practically all disorder, violence, and degradation in the tribe.

The San Carlos Apache know not whence they came. Fifty years ago many of them lived on upper Salt river; some claim the land they had there to this day, and would like to return. One of the men said he heard from the elders that they formerly lived in what is now the vicinity of Flagstaff, at the base of the San Francisco mountains, whence they went eastward, and finally came to the Salt and Gila rivers.

Only traces of their tribal organization remain. Of the divisions of the tribe known to whites as Coyoteros, Tontos, etc., the Indians have little knowledge. No clans exist. The people were divided into numerous small bands, known by some geographic peculiarity of the sections claimed by them as their chief seats, and each under a chief. Some of the chiefs were selected by reason of their prowess in war. A number of the bands and chiefs are still nominally recognized; their names and location are as follows:

Bands among the San Carlos and nearest related Apache

1. *Ce-ēš-ki-dn, Tce-ce-ēš-ki-dn,*[2] "projection of a mountain," "promontory"; live about Talklai; chief, Čil-ču-a-ni.

2. *Til-se-ke-ced-lan,* "two mountains (together)"; live about a mile below Talklai; chief, Antonio.

3. *S-čēs-če-ne,* "rocky hill"; live about Geronimo (a part of the so-called Coyoteros); no chief.

4. *Ce-yi-n, Ce-yin,* "cañon hollowed in rock"; live about Geronimo (a part of the Coyoteros); chief not known.

5. *Teš-čih,* "red paint" (red vegetal dye, used in facial painting and basketry); live in Cibicu valley; chief, Norman Cassido.

6. *Ti-dn-a-ye,* "bend over from a hill into a valley"; live near San Carlos; no chief.

7. *Kaž-na-ho-ti-ln,* "valley of willows"; live between Talklai and San Carlos; mixed; no chief known.

[1] See Hrdlička, Method of Preparing Tesvino among the White River Apaches; *American Anthropologist,* VI, 1904, pp. 190–1.

[2] For key to pronunciation see *American Anthropologist,* V, 1903, p. 419.

8. *Na-tah-na-di-ti-ln*, "cross the river with mescal"; some live at White Mountain; chief, ——.

9. *Ha-guš-tē-le*, "head of the valley"; live above Talklai; chief, Talklai.

10. *Ka-i-dn-čin*, "rows of trees"; live in the upper part of San Carlos valley; chief not known.

12. *Ce-bi-naž-ti-e*, "surrounded by rocks"; live 4 miles above San Carlos, in San Carlos valley; no chief.

12. *Kai-ha-te-in*, "growing-up trees" (trees of a certain variety, along the river); nothing definite is now known about this band.

13. *Thle-dil-go-žn*, "junction of two valleys" (where a "wash" joins the river); nothing definite known about it.

Of several of these bands only a few individuals survive, and these are scattered or have joined other bands.

DWELLINGS

The usual dwelling of the San Carlos Apache is known as a *khúva*, but it is also called by the borrowed term tipi. It is made, by the women, of slender, freshly-cut poles and green branches or brush. In ground-plan the khúva is slightly oval, measuring 10 to 12 feet in the longer and 8 to 9 feet in the shorter diameter. The structure is 9 to 10 feet high, and hemispherical to bluntly conical in form. Occasionally at the entrance there is a small, straight or curving extension which serves as a windbreak. The poles forming the framework of the khúva are generally of green willow from which the bark has been peeled; these are stuck in the ground, 2 or 2½ feet apart, and the tops bent over and tied together with anything handy. There are no forked supports and no regular cross-ribs, but occasionally some of the sticks are bent and intertwined with or laid obliquely upon the others. A slight opening is generally left between the saplings at the top for the escape of the smoke.

The erection of the dwelling, the women say, is easy enough; it takes but a single day. It is regarded as women's work, and that is why they, and not the men, build it. When the superstructure is finished, the interior is excavated to the depth of 12 to 18 inches, and most of the earth piled against the base of the structure, making it solid and keeping out water during rains. In winter the khúva is made smaller, in order that it may be warmer; in summer

1. School girls playing at house-building.

2. Recently occupied brush *khúva*, and a house of brush and stone.

3. Ruins of a recent Pueblo-like stone dwelling

HOUSES OF SAN CARLOS APACHE

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they build it larger, so as to give more shade and ventilation. In rainy weather it is covered as much as possible with sheets of canvas. No symbolism is connected with any part of the house, and no ceremony attends the entering into a new dwelling; in one family, however, it was said that they always make a prayer when going into a new khúva, and in one of the dwellings I saw two eagle feathers, undoubtedly a fetish, tied to one of the upright poles.

These simple Apache dwellings, except during heavy rain, are comfortable and cheerful, and owing to the cottonwood and willow branches with which they are covered, are pleasantly fragrant. The light is subdued, but may be easily increased by spreading the branches. The doorways are always low, enabling ready closure and insuring warmth, particularly at night. The doors usually face the west, because the prevailing winds in this region are from the east.

Although the khúva is a light structure, it is sometimes occupied for a considerable period. If an accident befalls it, as sometimes happens through fire or flood, or if it becomes necessary to burn it and its contents on account of the death of an occupant, or to abandon it by reason of the removal of the family to another locality, the loss is inconsiderable.

The dwellings are built generally in groups of three to six, forming camps, which, according to the Indians, are occupied by "friends," i. e., related families. In a number of instances a family lives in a khúva near a plank house built by the Government, which it prefers to use for storage purposes.

The San Carlos Apache have also a few quadrilateral dwellings with nearly flat roofs, but these were most probably introduced by the Yuma or the Mohave. There are likewise in San Carlos valley the ruins of several recent stone dwellings, standing singly but built much like the houses of the Pueblos. A similar structure, built partly of stone and partly of brush, is still inhabited (plate XXX, 2).

According to chief Čil-ču-a-ni, his people, in his childhood (about 50 years ago), built the same kind of khúvas as they do to-day. They did not construct dwellings of stone or adobe until after coming into more intimate contact with the whites.

The khúva is also the customary dwelling of the White Moun-

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tain Apache of Arizona. It is less common, especially in winter, among the Mescaleros in New Mexico, many of whom live in tents; and it is never built by the Lipan, who formerly lived, they say, only in tipis of buffalo hide. The Jicarillas, who also dwell chiefly in tents, sometimes erect brush houses somewhat similar to the khúva, but of different shape.

MANUFACTURED OBJECTS

In old objects of their own manufacture the San Carlos Apache are very poor. All that could be found or learned of were a few of the characteristic hemispherical caps, a few violins and flutes, and some nicely decorated saddle-bags. Their utensils are almost entirely those made by the whites, or are modifications of them. An exception occasionally seen is a nicely made gourd ladle, or spoon, the handle and border of which bear an incised decoration in simple geometrical figures.

Basketry. — The women make a limited number of baskets of several varieties. They weave a conical, household carry-all basket, called *tha-tca*, 2 to 2½ feet high, decorated with one to four bands 1 to 1½ inch broad, of simple geometric figures in black, brown, reddish, or blue, parallel with the border. The coiled border is strengthened by the inclusion of a stout stick or, in more recent time, of a heavy wire hoop. A buckskin fringe and border are occasionally added as a further decoration. This basket is carried on the back, a strap or string that is attached to one side passing over the forehead, and is used chiefly for carrying wood. Sometimes, in event of the death of its maker, it is placed on her grave.

Another and more common type of basket is a nicely decorated, more or less concave plaque, made almost entirely for sale. The decoration is in black (catsclaw), sometimes in black and brown (catsclaw and yucca), and the figure, as among other Apache, is usually some modification of a star-like motive. The workmanship in some of these flat baskets is excellent.

The third variety is the olla- or jar-shaped basket, with a decoration of simple geometric pattern in black (catsclaw) and, rarely, in brown (yucca). Some of these are of large size and

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command a high price; one, 38 inches in height and very well made, was sold during my last visit, by the woman who made it, for fifty dollars. The plaque and olla are both of coil-work, the carry-all is twined weaving.

The osiers used in the basketry are principally of the willow (*ka-jih*) and the cottonwood (*tes*). The shoots are cut in winter and made into bunches of 15 to 20 by the women; these bunches are eventually bent into broad rings, placed in a pot, and slightly boiled in order that they may be easily peeled with the fingers, occasionally aided by the teeth. They are then split with the teeth, and the flat outer splints, placed in bunches of 30 or 40, are washed thoroughly in cold water, dried in the sun, and stored for future use. The brownish red yucca root, called *bi-ka-ah-te*, is used only occasionally in basketry. The catsclaw (*ce-gol-sha-ha*) osiers are not boiled, but after having been softened in water are split in the same way as the willow sticks, and are likewise tied in small bundles until needed.

The designs on the baskets, both those used and those kept for sale, have no symbolic meaning; they are intended merely for decorative effect. A few of the basketry designs are identical with those seen among the Pima. The red coloring is produced with the *či* plant; the rarer blue with the ordinary washing blue; the yellow, restricted to the buckskin fringes, with a vegetal dye or an aniline color.

Basket-making is taught to a girl by her grandmother or mother from the time she is five or six years of age. She is first given young plants of the *e-ka-ie co-še*, a yucca (the spiny points of which are chewed off in order that they may not hurt her), the leaves of which she learns to interweave. The first style of basket that a young girl learns to make is the *tha-tca*. Coiled basketry, intended for sale, she does not learn to weave until quite grown.

The White Mountain Apache make basketry similar to that of the San Carlos people; among the Mescaleros and Jicarillas, however, while the decorative figures are related, the materials and workmanship of the baskets are wholly different.

The old San Carlos women say they always made some decorated baskets for use in the household; but the fine work with

human or animal figures, as well as several of the shapes, originated with the demands of trade.

Two of the coiled plaques collected for the National Museum were made, one in the writer's presence, by an old woman totally blind. Both are well woven, are of pleasing shape, and are decorated in simple geometric designs with martynia.

Baby-board. — The baby-board among the San Carlos Apache, called *pi-tca*, or *pi-tcal*, consists of an elliptical willow frame (*me-tca*), within which are fastened, close together, transverse ribs (*ka-pa-ne*), whittled from a soft wood that grows along the streams. The hood of the cradle (*pi-tha-na-na*, or *pi-tca-na-na*) is made usually by bending a number of reeds, placing them side by side, and fastening them together in several rows with sinew. Occasionally the hood is woven from fresh reeds or branches in much the same manner as among the Walapai. The hood may be painted red with *či* or left uncolored.

The baby-board is generally finished the first or second day after the birth of the child. In most instances it is entirely new, but sometimes the frame of an old cradle is utilized. The first cradle-board is approximately the size of the baby, but when the child outgrows it the mother makes a larger one. Before the baby is placed on the board the base is covered with fine cedar bark, or grass, or pieces of old cloth, or even excelsior, over which are placed several layers of old calico. Under the head of the child are generally laid several folded pieces of calico, and to the hood is attached a screen of muslin for the protection of the infant's face. Being now placed on the cradle-board, the body and feet of the child are covered with two or more layers of old but clean calico, and then it is laced to the board. To facilitate the lacing there is usually attached to the sides of the cradle-frame a strip of canvas or, rarely, buckskin, with holes along the free border. These flaps extend partly over the covering of the child, and being laced together, serve to hold it securely. The lacing is usually tight enough to prevent free movement of the body. The child is laid prone on its back, with its arms along the sides, thus leaving only the head free. In this position the infant is constantly kept, except during the three to five times that it requires attention in its wak-

ing hours of the day, when it is unlaced, cleansed, and allowed freedom for a while. As the child grows older and strong enough to be held in a sitting position on the mother's lap, its intervals out of the cradle become longer, and they increase again, except at night, when the child is able to sit alone. The time for entirely discarding the cradle approaches when the child begins to stand and walk; only exceptionally will a child of 15 to 18 months still be put in the cradle a part of the day or night.

While laced on the cradle-board the child sleeps a large part of the time; if the lacing be loosened, it usually becomes restless until laced up again. For this reason the infant is kept on the cradle-board at night, for otherwise, the women say, it would disturb the mother's sleep. While the child is sleeping, the cradle-board is laid upon the ground and the front lap of the hood is dropped to protect the face from flies and the light.

The pressure of the back of the head on the calico folds results, in time, in cranial deformation know as occipital compression, which is central or lateral according to whether the child habitually rested its head at the back or on one side. It is remarkable that among the older Apache, who were reared during the restless times when the people were compelled to move frequently from place to place, carrying the children with them, occipital deformation is much less common and less pronounced than among the younger generation.

Pottery.— The San Carlos Apache made ordinary pottery until about twenty years ago, since which time the industry has gradually ceased. This consisted of undecorated cylindrical cooking jars of medium size, with convex to nearly conical bases. The material used in the manufacture of this pottery was river mud, to which was added a decoction of *Sphæralcea emoryi*, called by them *i-sá-pith-az-ne-he*, or *i-zé-pith-az-ne-he*, which signifies "medicine-mix-in-making-jar." This plant was collected on the mesas, ground up, roots and all, and boiled with a little water. The liquid was mixed with the clayey mass, and also rubbed on the vessel, inside and out, before burning; this was supposed to make the ware tougher and less pervious.

Musical Instruments. — The musical instruments of the San

Carlos Apache are a flageolet and a peculiar one-string violin. The former, made of cane, is usually 15 to 20 in. (38 to 50 cm.) long, and decorated with geometric designs cut in the surface and colored, chiefly in blue and red. Plate XXXI illustrates a good example of these instruments, obtained from one of the Talklai policemen, who knew well how to play it.

According to Mr E. H. Hawley, specialist in musical instruments in the National Museum, this instrument is a primitive flageolet. It is made of a straight piece of cane between five joints. The two distal septa in each half (first and second, fourth and fifth) have been removed, while the third, situated near the middle, remains. The openings, each 5 mm. in diameter, are made in one side, one above the other, immediately below and above the middle partition, across which they are connected by a groove 4 mm. wide and deep. A band of tanned deer-skin, 1.7 cm. broad, from which a number of tassels hang as a decoration, is fitted about the body of the flute, at the middle, and can be slid up and down within certain limits. This band, which is essential to the production of the sound of the instrument, is so placed by the player that it covers the opening above the middle septum and also the groove, leaving the lower aperture to act as a sound hole; it thus forms a whistle of the tube, according to Mr Hawley. In the lower third of the instrument, and in line with the central openings, are four finger-holes, each 5 mm. in diameter, the centers of which are situated 9.7, 13.5, 16.4, and 18.3 cm. below the lower lip of the sound hole. The most distal aperture is closed with a wooden plug. All the openings, as well as the central groove, were pierced with a red-hot iron. Of the decorations the most prominent is the maltese cross, the symbol of a star. This flute is 48 cm. long and 2 cm. in average diameter.

The one-string violin is made of a piece of light, hollow wood, preferably a stalk of the agave. The body is usually a cylinder, 5 to 6.5 cm. in diameter and 30 to 35 cm. long, both ends of which are stopped with wooden disks. The string is of horse-hair, tightened over a small wooden bridge. The bow consists of a small arched reed, or stick, with a few strands of horse-hair. When played, the violin is held in the left hand, which is kept semiflexed.

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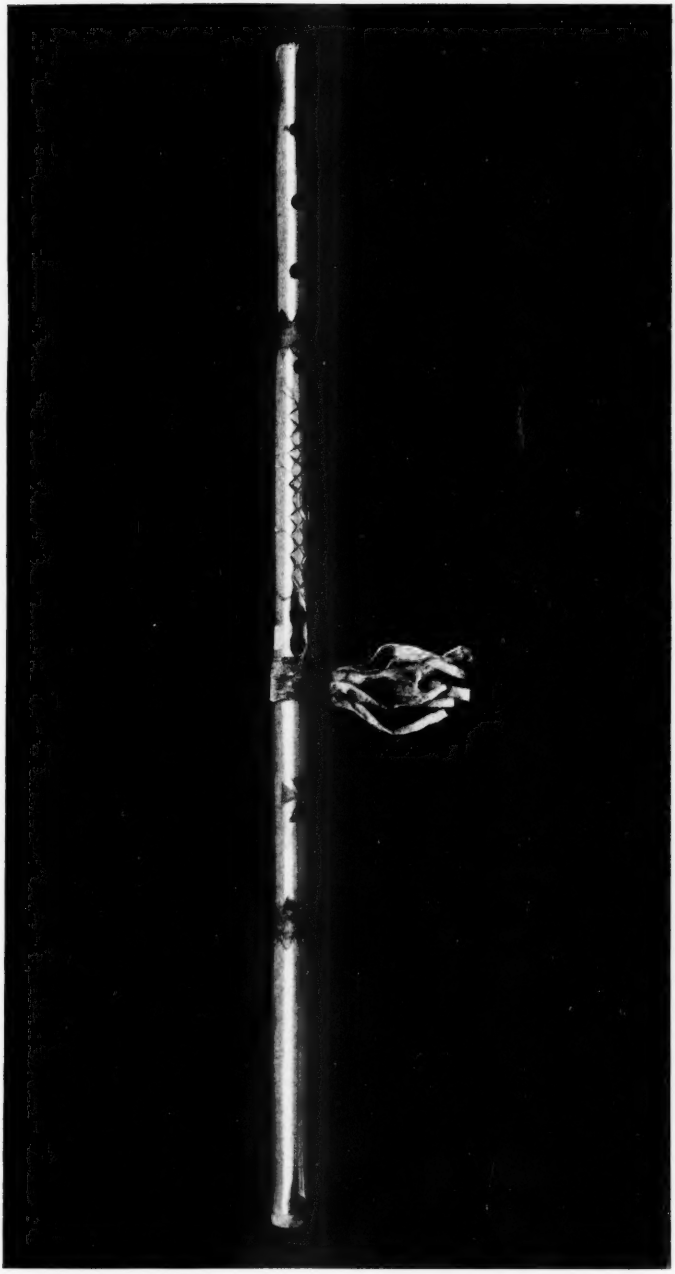

FLUTE OF THE SAN CARLOS APACHE

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The tunes produced with this instrument by a good player are characteristic and quite complex.

Besides the flageolet and single-string violin, a few of the Apache also have a small violin like that of whites, and closely resembling an instrument used among several of the Indian tribes in Mexico. The Apache themselves regard this instrument as of Mexican origin. The school girls and young women are fond of the jews'-harp.

HABITS AND CUSTOMS

The San Carlos Apache, especially the younger element, preserve but few of their ancient habits and customs. They have no distinctive ceremonies or dances, not even such as are still observed by their White Mountain relatives. The writer heard of a few medicine-men and one medicine-woman who still have recourse to incantations and fetishes, and are feared by the people at large. Witchcraft and the efficacy of fetishes are believed in, but scarcely more than among the lower classes of whites. A belief in spirits, especially bad spirits, or *čin-dis*, exists, and number four, and to a lesser extent eight, have more or less mystic significance. Of folklore there are tales about the coyote, owl, badger, etc. The owl is said to "talk good Apache." One that had been killed was tied on a line near a settlement, possibly as a protection against something. Two badgers that had been killed by the Apache were hung by their tails in the brush along a road.

Numerous observations, of physiological or medical interest, on the food and mode of life of this people are reserved for a more comprehensive account, but a few brief statements on various customs will here be presented.

Hair Dressing. — The hair of the San Carlos women is trimmed to the level of the shoulders. The girls and younger women comb the front hair over the forehead and cut it in line with the eyebrows, in the form of a "bang," while the remainder is allowed to fall naturally at the sides and back.

Old women simply brush or comb the hair backward. The hair of the men is always trimmed and permitted to hang at the sides and back without "banging." Bandana handkerchiefs are used as head-bands by some of the men.

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Tattooing. — The custom of tattooing did not exist among the old San Carlos people, but it is now very common among the young, especially the school girls. The people say the habit was learned from the Mohave settled near San Carlos. The tattooing is done on the glabella, forehead, middle of the cheek, chin, and back of the hand. The girls either tattoo themselves or one another, the materials employed being a needle or a cactus spine, and ink or charcoal. The figures are good copies of those seen among the Mohave, but their meaning is not known. If the figure somewhat resembles a letter of the alphabet, the children will say that it represents that character. They also tattoo, particularly on their hands, actual letters, and even names of sweethearts and relatives.

Record-keeping. — In one family a record of the age of the last child was kept by the father, by marking on a paper the number of "moons" since the birth of the child. Each moon was indicated by a cross, and a large dot was made for each tenth moon.

Mother-in-law Taboo. — The taboo concerning the mother-in-law seems to be reciprocal. Should a young man persist in speaking to his mother-in-law, the latter, with her family, might send him away as "no good," saying they "don't want such a son-in-law."

If she is to live with her married daughter, the mother builds her hut near-by, but in such a way that the door faces another direction, thus enabling the son-in-law, on coming out of his dwelling, to avoid catching sight of her.

Puberty Feast. — Among most of the Apache a feast is celebrated when a girl reaches puberty, but among the San Carlos people the custom has apparently been abandoned.

Play of Children. — While visiting the dwellings of the people, and the schools, the writer often observed groups of children at play, but no highly specialized native children's games were seen. The girls play more than the boys, and, except about the schools, playmates are restricted to children of the same family or to relatives. The oldest child has charge of the group. Play of all kinds is greatly enjoyed, though quarrels sometimes occur. On the whole the manifestations of the Indian child at play differ little from those of the white child, unless it be in the exercise by the former of greater patience and perseverance.

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The boys play with bow and arrow, marbles, and ball, and at running. Girls play hide and seek, and with pebbles, cans, and dolls; they also make dolls, cradles, and houses, and when a supply of good mud is available, model tiny effigies of women, men, dolls, horses with their riders, other animals, and various implements and utensils. In these much ingenuity, deftness, and attention to detail are exhibited.

If, while running about in the brush, a stranger approaches, the girls, of whatever age, become quiet in an instant, and each drops flat behind a bush or other object, hiding quietly and motionless until the intruder has passed. If they find that he has seen them, they scatter with all rapidity; if one tries to catch them, they cry out angrily; and if actually caught, will fight with all their means and strength.

The principal play of the girls is the building and furnishing of miniature houses; with sticks, leaves, grass, and twigs they construct khúvas and shelters, often with remarkable faithfulness of detail, placing in the former miniature furniture and finally domiciling therein a doll-baby. About the schools (plate XXX, 1) where more girls congregate, entire villages, striking in their picturesqueness, are built daily.

Dolls are made by tying tufts of certain plants near the top, or from rags. With pebbles the girls play "jacks," much as white children do.

With slight modification these details concerning the play of children apply to all the Apache as well as to other southwestern Indians.

Training of Children. — A boy among the San Carlos Apache is taught by his father and grandfather the various things he is supposed to know or to be able to do. This instruction begins as soon as the boy can talk. The first thing he learns is to count. When "big enough" (without reference to his having reached puberty), the boy goes out with his father, who teaches him to run on flat ground, and then up and down hill. He is encouraged to break branches from trees, so as to become strong; to jump into cold water, that he may lose fear and learn to swim; and is taken out early in the morning and taught to race. The boy also

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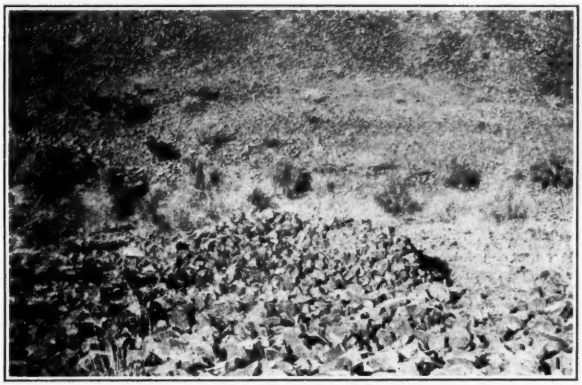
learns to cut wood, to farm, and to do many other things a knowledge of which he will find necessary later in life; but the prime object of his training, which differs according to circumstances, is to make him able, strong, and fearless.

The girl is trained by her mother, and especially by her grandmother. As with the boy, the training begins very early, practically as soon as the child can understand and control its movements; but it is never systematic nor severe. The little one is made to rise early in the morning and fetch water, and gradually she is taught to aid in the household duties — in cooking and in the care of the younger children. As before mentioned, when she is five or six years of age she receives her first lesson in simple basketry; but the manufacture of decorated baskets and saddle-bags, and of beadwork and clothing, she is not taught until womanhood approaches.

Burials. — The burials of the San Carlos Apache are never found very near the habitations, and sometimes they are four or five miles distant. The dead are placed in natural rock shelters in the cliffs, in convenient rock crevices, on a rocky mountain side, in the earth or talus at the base of a hill, or in nooks of small, unfrequented cañons.

Two of the cañons near Talklai contain together more than eighty burials. Graves of men, women, and children occur in the same locality, though they are seldom close together, and some are entirely isolated. When a burial is to be made on a hillside, the talus and earth are removed until a platform large enough to receive the body is formed. On this the remains are placed, and over them is constructed a rude frame of rafters and brush, which is covered with rocks, forming a heap 4 to 10 feet broad, 6 to 15 feet long, and 2½ to 4 feet high (plate XXXII, 1). Earthen graves usually are constructed in a similar manner, and are also partly covered with stones. In a few years the framework of the grave becomes decayed and falls in.

The body is taken to the place of burial by men on horses, or in a wagon, usually early in the morning following the day or night of death. No coffin is used, and nothing is placed beneath the body, which is clothed as at the time of death. If the remains be those of a man, they are also wrapped in a Navaho blanket and in



1. Stone grave of an adult.

2. Grave of an infant

3. Infant's grave, with cradle-board and shovel deposited thereon.

GRAVES OF SAN CARLOS APACHE

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one or two woolen blankets or a quilt, and over all is placed a covering of canvas or heavy cotton. A woman is also buried in the garments with which she was clothed at the time of death, accompanied with her beads, and the body is likewise wrapped with blankets or cloth; but there are not so many of these articles as in the case of a man. When a child dies it is dressed in numerous spare articles of its clothing and is abundantly covered. On the grave of a man is usually found the shovel with which the grave was dug, occasionally also an ax; on a woman's grave, an ax and sometimes a carrying basket; on the grave of a little child, a cradle-board; and on or in the grave of a larger child several tin cups and pans. No further attention is given to the grave or to the remains. Tree burial, which occurs among the White Mountain Apache, is not practised by the San Carlos people, and cremation is unknown.

ANTIQUITIES

With the exception of the portion that lies within San Carlos valley, the San Carlos reservation is poor in antiquities, the country not having been adapted to extensive sedentary settlement. No petroglyphs were observed within the reservation, nor indeed in much of the adjacent region of the White mountains.

In San Carlos valley and the neighboring flats of the Gila, archeologic remains, consisting of ruined habitations and burial mounds, are more numerous. The habitations were in small clusters and larger villages. At least two villages of considerable size once existed in San Carlos valley, the ruins of one of them being still traceable within the grounds of the Indian school near Talklai.

The ruins of these habitations are marked on the surface by single or double rows of stones and by low mounds of moderate extent. The settlement near Talklai consisted of perhaps 200 houses. No regularity is observable in the ground-plan of the village; often two or three dwellings are connected, but each such group faced in a different direction. All the dwellings were apparently of one story. The rooms were quadrilateral, some nearly square, and averaged 8 by 10 feet in size. The walls were massive, reaching a maximum of two feet in thickness. The masonry consisted of slabs of unworked stone of varying size, laid vertically in adobe mortar. The stones were obtained from the nearby river.

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These dwellings, the floors of which are now 2 to 2½ feet beneath the surface, are completely filled with soil and debris. The mounds represent clusters of such dwellings.

When dug into, the rooms of the houses were found generally to contain a simple corner fireplace, near which potsherds were usually unearthed. In some of the few cases in which excavation was conducted, sherds of pottery were the only reward. In one room, however, there was found on the floor about half of the skeleton, in a poor state of preservation, of a person of small stature. At some distance from these bones and about a foot above the level at which they were encountered, there was embedded in the clay, in a vertical and apparently undisturbed position, a small jar of coiled ware filled with earth and covered with a small slab of stone. Another room yielded, in addition to a few potsherds, a polished double-bladed ax.

Slight excavation conducted in the slope of one of the mounds exposed several rooms, each of which contained pottery vessels and one or more metates and manos. The pottery is chiefly mediocre, and in some instances quite crude; but there were also pieces of better quality, neatly decorated in white, black, and several shades of red. In two of the rooms a large jar was found partly filled with calcined human bones; both jars were covered, one with a smaller jar, the other with a fragment of a bowl.

Several rooms in the Talklai ruin had previously been excavated by teachers in the Indian school. In some of them were found entire pieces of pottery, and in at least one room a jar containing burned human bones. On the surface of the ruin, and in the piles of stones that had been carted there from part of it that had been converted into an orchard, the writer found several stone axes ranging from crude to finely polished, a number of stone pestles of similar workmanship, many grinders varying in shape and size, and other stone objects, all of which are now in the National Museum. A number of large, deep, broken mortars were found in the debris. A striking feature of the excavations was the great rarity of stone chips and the total absence of arrow and spear points and knives, apparently indicating that the energies of the people in implement making were directed largely toward those

employed in domestic life. Some arrowpoints have been found on the neighboring mesas by the teachers and children, but their origin is uncertain.

From what was seen of the other ruins, they are identical in character with those here described. Some have been dug into and pottery containing burned human bones were found. At San Carlos, on the Gila, a large jar of coiled ware, containing cremated human bones and covered with a bowl, was found in digging by school children, and at the time of my visit was in possession of Dr S. B. Weeks, superintendent of the school.[1] It may here be remarked that a somewhat similar burial was unearthed early in the present year at Sacaton, on the Gila, three days' journey southwestward from San Carlos. These call to mind burials of a kindred nature found by Mr F. H. Cushing in Salt river and Gila valleys for the Hemenway Expedition, by Dr J. Walter Fewkes in the vicinity of Solomonsville on the Gila for the Bureau of American Ethnology, and a recent single find near Fort Apache. It points to a former widespread custom, among the ancient inhabitants of this section, of cremating their dead and burying the remains in jars, while at the same time some non-cremated dead were buried in the rooms.

When questioned about the ruined habitations and the people who abandoned them, the Apache profess total ignorance. They say that when they first came into the country the ruins were just as they are today. Their name for the old people is *Na-ilh-ki-de*, which means "ancient ones." The fact should not be overlooked, however, that their traditions are meager. Many of the men who would have preserved their lore were killed during their almost incessant warfare, and the younger element know little beyond personal recollection.

U. S. NATIONAL MUSEUM,
WASHINGTON, D. C.

[1] Several similar burials have since been discovered in this locality, and some of the calcined bones and potsherds obtained have just been received from Dr Weeks by the National Museum.

A PAWNEE PERSONAL MEDICINE SHRINE

By GEORGE A. DORSEY

The following narration by Shooter, one of the oldest of the Kitkehaki tribe of Pawnee, is interesting from several points of view, especially on account of the light it throws on the use of personal "medicine" shrines among the Pawnee.

"My father was born a poor boy while our people lived at the bend of the Republican river. As he grew up he wandered about trying to find some way to become prominent among the people. He wandered away from the village until he came to a high bluff. On the south side of the bluff was a deep ravine, with many cedars. Now, he wandered about there until he came to a place in the middle of the cedars, and there he saw a stone man, and about the man there were many presents. My father filled his pipe and smoked to the stone and asked help of him. He also placed some presents in front of the stone man, then prayed to him for success. He went off, and in a few days found a camp of the enemy. He captured many ponies and took them home.

"A few days afterward he started out on the war path, taking several young men with him. On the way he told them that they must be poor in heart and must pray for success. When they came to the ravine he told the others to stay behind, and he went on by himself. He came to the place where the stone man was and offered presents and smoked to him. After he had talked to him he returned to the other young men. They continued their journey and found the tipis of some enemies, which they attacked. They killed many and took some scalps. They also captured many ponies. They returned to their village victorious.

"The people wondered why my father had such success in capturing ponies and killing enemies. One of his brothers begged him to tell the secret of his success. He consented and told his brother to come with him. They started to the ravine and soon came to the place where the stone man was. About him they saw many

presents of moccasins, leggings, and many other things. They made presents to the stone man and gave him smoke from their pipe. When they talked to the stone man they said: 'We wish to touch you. Do not be angry with us.' They touched the stone man and found him to be made of iron-stone of a greenish color. They believed that the stone man was a god, that he had come from one of the stars in the heavens. They kept the secret for a long time. The brother went off and came to a camp of some other people, and in the night they captured many ponies and took them home.

"There was one man in the tribe who did not seem to have luck in anything that he undertook to do. When he joined a war party, that party failed to capture any ponies. Everybody disliked him. Finally he was rejected by war parties. At last he gave up and was looked upon as a poor man. One day this poor man determined to beg my father to tell him why he was so successful in capturing so many ponies. One night he went to my father's lodge. As he entered, my father greeted him with '*Nawa!*' and pointed to a mat for him to sit upon. The poor man placed his hands upon my father's head, passed them down to his arms, and said: 'My brother, I am poor. Take pity on me. Tell me what it is that makes you so successful in capturing ponies.' My father said: 'I am glad to hear you say this. Go to your home. Have your people make moccasins for you. This night you and I shall start on a long journey, and I will show you the thing that makes me successful.' The poor man thanked my father and went to his lodge. He made preparations, then went to my father's lodge, where he found my father smoking his pipe and waiting for him. They started. For many days they walked toward the west, and at last came to the ravine. My father said: 'Now, my brother, you are the third man who will know my secret. Where we are going there rests an iron-stone man. Be sure to be poor in heart. Talk to the stone and let all your wishes be known. Say that you are poor, and keep nothing back.'

"When they came to the place where the stone man had always stood, they saw that he was gone; there was only a burnt place where the stone had stood. My father said: 'My brother, the thing is gone, but it is a god. Fill your pipe and place some of the

tobacco upon the ground where he stood and speak to him. He is a god; he will hear your words.' The poor man, instead of filling his pipe, went to the place and knelt down. He bowed his head to the ground, then stood up, and said: 'Heavens, why could you not let this god remain until I should come? He is gone, but where? I shall pray to this place where he once stood. His power must remain upon the ground.' He knelt down to the ground and said: 'My Father, the big Meteor-star, I ask you to take pity on me. I am poor. My people do not like me. They call me 'the poor man.' Now I call upon you to take away this poor spirit of mine and put a new spirit in me. Make it for me so that I can capture many ponies. Make me brave so that I can kill the enemy, and once in a while let me take a scalp so that I may offer it to the gods. Let me become a brave, then a chief.' The poor man arose, filled his pipe, gave a few whiffs toward the heavens, then a few whiffs to where the iron-stone man had sat. As he blew the whiffs, he said: 'Grant my wishes.' Then he emptied the ashes from his pipe upon the ground, where the iron-stone man had sat. My father made his offering, and they started off. After a few days' journey they came to a village. The two men captured several ponies, then they went home.

"The poor man became a great warrior. When the village was attacked by the enemy he killed many of the enemy and counted coup. Finally he was recognized as a brave man. He was one of a delegation of chiefs selected to go to Washington to make the first treaty, and when the delegation returned from Washington he wore upon his breast a medal of one of the presidents. When he saw my father, he took the medal from his breast and placed it upon him, saying: 'You shall be a chief, and I shall be only an errand man for you,'—so grateful was he to my father because he had helped him when he was in trouble."

FIELD COLUMBIAN MUSEUM,
CHICAGO, ILLINOIS.

DRESS AND ORNAMENTS OF THE NEW ENGLAND INDIANS

By CHARLES C. WILLOUGHBY

HAIRDRESSING

The hair of the New England Indians was dressed in various ways, the styles being determined in a measure by the age and station of the individual. At the age of puberty the boys were permitted to wear it long; previous to that period it was cut in various ways. Some of them wore a long foretop, a long lock on the crown, and one on each side of the head, the rest of the hair being cut even with the scalp.[1] Among the Omaha the boys belonging to different gentes had their hair cut in forms symbolic of their particular gens.[2] It seems probable that a similar practice was prevalent in New England. The men sometimes wore their hair in a loose, disheveled manner,[3] although generally, and especially among the better class, much care was observed in oiling and dressing it. The young men and soldiers frequently wore it long on one side, that of the opposite side being cut short.[4] The long hair upon the left side was bound into a knot.[5]

Another method which seems to have been quite general was to gather and tie the hair into a long round knot at the back of the head, like "a horse's tail bound with a fillet."[6] In this knot or twist feathers of the eagle or turkey were fastened.[7] The front hair was cut short or was shaved far up on the head, the long hair remaining being combed and twisted in various ways and intertwined with

[1] Wood, *New England's Prospect*, p. 72.

[2] Alice C. Fletcher, *A Study of the Omaha Tribe*, Smithsonian Report, 1897, p. 582, pl. II.

[3] John Ogilby, *America: Being an Accurate Description of the New World*, p. 151.

[4] Wood, op. cit., p. 72.

[5] Morrill, *Poem on New England*, Mass. Hist. Coll., 1st series, vol. I, p. 131, repr. 1859.

[5] Wood, op. cit., p. 71.

[7] *Gookin's Hist. Collections*, Mass. Hist. Coll., 1st series, vol. I, p. 153.

feathers,[1] as already noted. Higgeson mentions one lock being longer than the rest;[2] he probably refers to the scalp-lock. The hair of the Mount Hope warriors was trimmed "comb fashion,"[3] that is like a cockscomb, both sides of the head being shaved, leaving a ridge of comparatively short, upright hair extending across the head from front to back. The hair was sometimes gathered and tied in two locks or rolls,[4] the common method among most modern Indians who wear it long.

The beard was rarely allowed to grow,[5] but was removed as it appeared. This custom was not universal, however, for Brereton[6] noticed several Indians with black, thin beards in the party who met Gosnold.

There is little information as to the methods of dressing women's hair. Verrazano[7] says they adorned their heads with divers ornaments made of their own hair which hung down before on each side of their breasts. Champlain[8] saw a girl with her hair very neatly dressed with a skin colored red and bordered on the upper part with little shell beads. A portion of it hung down behind, the rest being braided in various ways. Both sexes sometimes powdered their hair.[9]

TATTOOING

Tattooing seems to have been confined principally to the cheeks, upon which totemic figures were made. Wood[10] writes that many of the better class bore "upon their cheeks certain pourtratures of beasts, as bears, deares, mooses, wolves, etc., some of fowls, as of eagles, hawkes, etc., which be not a superficial painting but a certain incision or else a raising of their skin by a small, sharp instrument under which they conveigh a certain kind of black unchangeable ink which makes the desired form apparent and permanent."

[1] Champlain, *Voyages*, vol. II, p. 63 (Prince Society).
[2] Higgeson, *New England Plantation*, Mass. Hist. Coll., 1st series, vol. I, p. 123.
[3] Drake, *History of Philip's War*, p. 23.
[4] Ibid., p. 116.
[5] Champlain, op. cit., p. 85.
[6] Brereton, *Account of Gosnold's Voyage*, Mass. Hist. Coll., 3d series, vol. VIII.
[7] Hakluyt, *Divers Voyages*, Hakluyt Society's reprint, p. 65.
[8] Op. cit., p. 85.
[9] Gookin, op. cit., p. 153. S. G. Drake, *Tragedies of the Wilderness*, p. 52.
[10] Op. cit., p. 74.

Johnson[1] notes a blue cross tattooed ("dyed very deep") over the cheek-bones of the women.

FACE PAINTING

Face painting was common with both sexes, and among the men more especially when on war raids. Soot was commonly used for black, and red earth or the powdered bark of the pine tree for red.[2] These were the more common colors. White, yellow, and blue were also used. Waymouth[3] saw men with their bodies painted black and their faces black or red, some having stripes of excellent blue over their upper lip, nose, and chin. The eyebrows were sometimes painted white.

The women painted their faces with various colors and in time of mourning with black.[4] They "painted their faces in the hollow of their eyes and nose with a shining black, out of which the tip of their nose appears very deformed, and their cheek bones being of a lighter swart black on which they have a blue cross dyed very deep."[5]

CLOTHING

The breech-clout was worn by both sexes. It was made of the skin of various animals, dressed with or without the hair. Champlain saw the skin of the doe and seal used for this purpose. Archer[6] speaks of seal skin, Waymouth[7] of beaver skin, and Brereton[8] of black tanned skin. Later a strip of European cloth a yard and a half long was used in place of the skin of an animal. A girdle of snake skin[9] or other material (Samoset's girdle was fringed) served to support the breech-clout, which passed between the legs of the wearer, its ends being joined to the belt or carried up before and behind between the body and the girdle, over which

[1] Edward Johnson, *A History of New England*, London, 1654, p. 116.

[2] Roger Williams, *Key into the Language of America*, Coll. R. I. Hist. Soc., vol. I, pp. 154, 160.

[3] Waymouth, *Voyage to the Coast of Maine*, Mass. Hist. Coll., 3d series, vol. VIII, pp. 136, 146.

[4] Gookin, op. cit., p. 153.

[5] Johnson, op. cit., p. 116.

[6] Archer, *Account of Gosnold's Voyages*, Mass. Hist. Coll., 3d series, vol. VIII, p. 73.

[7] Op. cit., p. 136.

[8] Op. cit., p. 88.

[9] Ogilby, op. cit., p. 152.

they hung like an apron, "a flap before and a tail behind." It is probable that the apron mentioned by Williams, Brereton, and other writers was the broad end of the breech-clout hanging before. As a rule the boys wore no breech-clout until ten or twelve years of age, but the girls wore a "little apron" from their birth.[1] The woman's breech-clout hung down a little longer behind than the man's.[2]

Usually neither sex wore any other garment indoors,[3] and it was not uncommon in earlier days for both sexes to appear out of doors in this scanty dress. In Wood's time the women usually wore an additional short garment of skins or of European cloth wrapped like a blanket about their lions, reaching down to their knees, which they never put off in the company of Europeans.

In addition to the breech-clout it was customary for the men, and sometimes for the boys, to wear close-fitting leggings of tanned deer skin.[4] These were worn for warmth in cold weather, on dress occasions, and by hunters as a protection from brush and briers. Their lower ends were fastened within the moccasins[5] and their upper extremities were secured by straps to the girdle, which was sometimes ornamented with pendants or "set with forms of birds or beasts." The leggings were ornamented with designs in yellow, blue, and red.[6] The women also sometimes wore leggings.[7]

Moccasins were made usually of moose skin, this leather being thick and durable. When moose skin could not be obtained, deer skin was substituted. Beautiful moccasins of white dressed skin embroidered with dyed moose hair were sometimes worn by the women. Such moccasins were worn at dances[8] and on other ceremonious occasions.

Mantles or robes were made of the skins of the moose, deer, bear, beaver, otter, raccoon, fox, and squirrel, and were worn by

[1] Williams, op. cit., p. 106.

[2] Champlain, op. cit., p. 85.

[3] Williams, op. cit., p. 106.

[4] Waymouth, op. cit., pp. 136, 140. Mourt's Relation, *Journal of the Pilgrims to Plymouth*, Cheaver's reprint, p. 59.

[5] Morton, *New English Canaan*, Prince Society's reprint, p. 142.

[6] John Josselyn, *Two Voyages to New England*, Veazie reprint, p. 100.

[7] Morton, op. cit., p. 144.

[8] Mrs Rawlandson's Captivity in S. G. Drake's *Tragedies of the Wilderness*, p. 52.

both sexes. Beautiful cloaks were manufactured of the iridescent feathers of the wild turkey, "woven with twine of their own making,"[1] so that nothing could be seen but feathers. These cloaks were usually the work of the old men,[2] but sometimes were made by the women for their children.[3]

When in the vicinity of Wellsfleet harbor, Massachusetts, Champlain[4] saw robes woven of "grass and hemp scarcely covering the body and coming down only to the thighs." These were probably identical with the silkgrass mantles of the southern Algonquians illustrated by John White in 1585.[5]

A single skin of the moose, deer, or bear served for a man's robe. Moose skins were commonly dressed without the hair and were made "wondrous white."[6] Few examples of white-dressed buckskin have been preserved. A pair of old Algonquian moccasins of this material are in the Peabody Museum at Cambridge. They are of a uniform milk white, and in texture resemble the finest chamois skin. When used as a mantle the white-dressed moose skin was ornamented near its edges with a border in color laid on with size "in form like lace set on by a tailor, and some they stripe in size with works of several fashions very curious according to the several fantasies of the workmen wherein they strive to excel one another."[7] Verrazano saw a similarly ornamented robe upon an Indian whom he met in southern New England in 1524.[8] The colors used were evidently red, blue, and yellow.[9] The Nascapee and Montagnais to the north of the St Lawrence at the present time ornament the borders of their deer-skin robes and coats with elaborate ancient patterns in these colors, laid on with a size made of fish roe, a pointed bone serving instead of a brush. Examples of this modern work may be seen in the larger museums. Similar

[1] Morton, op. cit., p. 142.

[2] Williams, op. cit., p. 107.

[3] Josselyn, op. cit., p. 78.

[4] Op. cit., p. 85.

[5] For a reproduction of this drawing see Eggleston, *Household History of the United States*, p. 70.

[6] Morton, op. cit., p. 142.

[7] Ibid.

[8] Op. cit., p. 65.

[9] Josselyn, op. cit., p. 100.

designs in bead-work upon the borders of the cloth coats of the Penobscot and Micmac chiefs are survivals of the ancient New England decoration. These bead-work designs are also similar to the painted designs of the north. Certain decorative motifs in these borders are persistent throughout a large portion of the great Algonquian area.

Deer-skin mantles were dressed with or without the hair, and a perfect tail greatly enhanced their value. In winter the hair was worn innermost.[1] Those especially prepared for summer wear were dressed usually without the hair. These garments were fastened at the shoulders with leather. They were thrown over one or both shoulders and brought usually under one arm.[2] When traveling they were also secured at the waist with a belt. This belt was sometimes hollow and served as a receptacle for parched corn, the usual food for a journey.[3]

The common method of wearing a mantle left one arm exposed. In cold weather this arm was usually covered with a "deepe furr'd cat [lynx] skin like a long large muffe which hee shifts to that arm which lieth most exposed to the winde."[4]

One of the Indians who, with Samoset, visited the Pilgrims, wore a "wild cat's skin or such like on one arm,"[5] not carried hanging over the arm as some have supposed.

Nearly one hundred years previous to the arrival of the Pilgrims Verrazano also saw skins of the bay lynx worn as arm coverings by the Indians of southern New England.

Morrell, in his poem on New England, written in 1623, writes that "an otter skin their right arms doth keep warm." Levett evidently saw beaver skins used in pairs as detached sleeves.[6] Waymouth says some of the mantles "had sleeves, most had none." He does not make it clear, however, whether they were attached to the mantle or formed separate articles of clothing. The Nascapee

[1] Levett, *Voyages to the Coast of Maine*, Mass. Hist. Coll., 3d series, vol. VIII p. 178.

[2] Higgeson, op. cit., p. 123.

[3] Williams, op. cit., p. 33.

[4] Wood, op. cit., p. 73.

[5] Mourt, op. cit., p. 59.

[6] Op. cit., p. 170.

and Montagnais and the neighboring Eskimo wore coats fitted with sleeves, and it is possible that the eastern Maine Indians may have had such garments in prehistoric times, but there is hardly enough evidence to warrant the assumption.

The men wore at the girdle a pouch of dressed skin containing fire-making implements.[1] A pipe and tobacco were also carried in the pouch, which was sometimes suspended from the neck.[2] The women's robes were longer and fuller than those of the men. Instead of one deer or bear skin two were sewed at full length. These garments were so long as to drag on the ground "like a great ladies train."[3] For want of better clothing the poorer classes sometimes used grass or the leaves of trees.[4] This practice does not seem to have been common. During the first trading expedition of the Pilgrims the Indian women sold their robes "from their backs, and tied boughs about them, but with great shamefastnesse."[5]

HEADDRESS

Eagle or turkey feathers were worn in the hair. A headdress of upright feathers was also worn, which was probably similar to those common among many modern tribes. It was like a coronet,[6] broadwise like a fan[7] or like a turkey-cock's train.[8]

A curious head ornament of colored deer hair was worn, similar to those common among certain western tribes during the century just past. The western examples are fastened to the scalp-lock and cross the head from front to back, the dyed hair of which they are made being longer in front and standing upright. Gookin[9] describes those of New England as "deer shuts made in the fashion of a cock's comb dyed red and crossing their heads like a half moon." Waymouth refers to them as a "kind of coronet . . . made very cunningly of a substance like stiff hair colored red,

[1] Brereton, op. cit., p. 91.
[2] Williams, op. cit., pp. 55, 108.
[3] Morton, op. cit., p. 144.
[4] Champlain, op. cit., p. 123.
[5] Mourt, op. cit., p. 91.
[6] Brereton, op. cit., p. 92.
[7] Mourt, op. cit., p. 59.
[8] Archer, op. cit., p. 75.
[9] Op. cit., p. 153.

broad and more than a handful in depth." The skin of a black hawk was highly prized as a headdress. White feathered bird skins, a fox's tail, or a rattlesnake skin were also used. Head-bands decorated with wampum and other beads were not uncommon.

ORNAMENTS IN GENERAL

Bracelets, necklaces, and head-bands were common, especially among the women. Mrs Rawlandson saw a necklace of human fingers.[1] Ear pendants of copper were worn at an early period. Pendants in the form of birds, beasts, and fishes, carved from bone, shell, and stone, were worn in the ears,[2] also the brilliant skin of the humming bird. Verrazano,[3] in 1524, saw many plates of wrought copper. Archer saw a piece of copper a foot in length and half as wide, used as a breast-plate. Brereton,[4] in 1602, saw a "great store of copper, some very red, some of a paler color [brass]. None of them but have chains, earrings or collars of this metal. . . . Their chains are many hollow pieces cemented together, each piece of the bigness of one of our reeds, a finger in length, ten or twelve of them together on a string which they wear about their necks. Their collars they wear about their bodies like bandoliers, a handful broad, all hollow pieces like the other but somewhat shorter, four hundred pieces in a collar, very fine and evenly set together."

From archeological data we learn that native copper ornaments were used to a limited extent by the New England Indians, though they were probably never common. European copper and brass were acquired at a very early date and skilfully worked into tubular beads and other ornaments. At the time of Gosnold's voyage (1602) ornaments of these metals were so common among the southern New England natives that they offered to the explorers their "fairest collars and charms for a knife or such like trifle." Beads, plates, and triangular arrowpoints of copper and brass similar to those seen by Brereton and other writers have been taken from graves and village sites and may be seen in both public and private collections.

[1] Op. cit., p. 48.
[2] Wood, op. cit., p. 74.
[3] Op. cit., p. 65.
[4] Op. cit., p. 91.

Both discoidal and tubular beads of shell were used in New England at an early date, but they were probably rare and highly prized in prehistoric days. Champlain saw shell beads used in embroidery and also as ornaments for the hair. Weymouth mentions bracelets of little round white bone strung together on a leather string. Bracelets of small shell beads were also found by the Pilgrims on the skeleton of a child at Cape Cod.

The New England Indians could have found little difficulty in making and perforating the discoidal beads with primitive tools. Perforating the larger tubular beads must have been difficult, but not beyond the ability of the primitive artisan.

There seems to be little evidence that the smaller tubular shell beads of the variety generally known as wampum were made to any extent by the New England Indians previous to the beginning of the seventeenth century. After receiving awls from European traders the Narragansetts and Pequots were able to produce it in considerable quantity, and these tribes grew "rich and potent" by its manufacture. Prior to 1627 there seems to have been very little wampum among the New England tribes, its use being confined to "ye sachems and some spetiall persons that wore a litle of it for ornament."[1] This harmonizes with what we have already learned of shell beads from the early explorers.

During the visit of the Dutch to Plymouth, in 1627, they sold to the English 50$^{li.}$ worth of wampum to barter with the Indians for furs and other commodities. It was two years before this small quantity was disposed of. The demand, however, steadily increased, and as it became known among the inland tribes the English could with difficulty obtain enough to supply the demand "for many years together." "Neither did the English of this plantation, or any other in ye land, till now that they had knowledge of it from ye Dutch so much as know what it was, much less yt it was a comoditie of that worth and valew. But after it grue thus to be a comoditie in these parts, these Indians fell into it allso and to learne how to make it; for ye Narigansets doe geather ye shells of which y^{ey} make it from their shors. And it has now continued a current comoditie aboute this 20 years."[2] The purple por-

[1] Bradford, *History of Plymouth Plantation*, Boston, 1898, p. 282.

[2] Ibid., pp. 282–283.

tion of the quahog shell (*Venus mercenaria*) was used for making the colored variety of wampum.

Much of the later white wampum seems to have been made from the white part of the same shell. The columella of the periwinkle was also used for making the white variety. The beads are cylindrical and are perforated lengthwise. They average less than one-fourth of an inch in length by about one-eighth of an inch in thickness. The color of the dark variety varies from a uniform purplish black to a light purple, interveined with white lines and bars. The greater part of the wampum of Indian manufacture was made by the Narragansetts. The Dutch and the Swedes of the middle states from a very early date manufactured large quantities, and as late as 1844 it was made and sold by them to the Indian traders of the west.[1]

Besides its use as currency, wampum was woven into garters, belts, bracelets, collars, ear pendants, neck ornaments, head bands, etc. It was used for ornamenting bags, wallets, and various articles of dress. The wampum belt, woven of purple and white beads in symbolic figures, served as an inviolable and sacred pledge which guaranteed messages, promises, and treaties.

Mrs Rawlandson[2] mentions an Indian woman who wore a "kersey coat covered with girdles of wampum from the loins upward. Her arms from her elbows to her hands were covered with bracelets; there were handfuls of necklaces about her neck." One of King Philip's belts, curiously wrought with "black and white wampum in various figures and flowers and pictures of many birds and beasts," was nine inches broad and when hung about Captain Church's shoulders reached to his ankles. Philip wore two other belts, one with two flags upon the back which hung from his head, the other with a star upon the end being hung from his breast.[3] When Philip visited Boston he wore a coat and leggings set with wampum "in pleasant wild works" and a broad belt of the same.[4]

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CAMBRIDGE, MASS.

[1] Beauchamp, *Wampum and Shell Articles used by the New York Indians*, p. 333.
[2] Op. cit., p. 52.
[3] Drake, op. cit., p. 142.
[4] Josselyn, op. cit., p. 111.

THE SPLAYED OR SO-CALLED "CASCO FOOT" IN THE FILIPINO

By ALBERT ERNEST JENKS

In the *American Anthropologist* for April–June, 1904, there appears an article by Dr George A. Skinner under the title "Casco Foot in the Filipino." In connection therewith I wish to present a few facts.

I have repeatedly seen the abnormal foot development in question among all the unshod people whom I have visited in the islands, and publish herewith (plate XXXIII) illustrations from various groups of them which show the peculiarity. The photographs were made before Dr Skinner's article was read, and only three, the bottoms of feet *a*, *d*, *e*, were taken to illustrate the abnormal. The facts I present are mainly those that I had collected before reading Dr Skinner's article. They were not gathered for the purpose of refuting his thesis and conclusions, which are as follow:

"The constant use of the toes in the work [that of propelling the casco by throwing the human body forward with the weight against a pole, resting its lower end on the river bed] leads to a peculiar and very great development of the feet. . . . One must consider that feet of this formation are an attempt on the part of nature to adapt these people to their occupation" (that of poling the casco); and, "hence it appears to be an occupation development and not hereditary."

There is an Igorot man in Bontoc pueblo, in the province of Lepanto-Bontoc, Luzon, whose great toe on one foot is turned at an obtuse angle from its normal position; the extent of this extreme splaying may be better understood by noting that the great toes shown in the accompanying illustrations are turned simply at acute angles from the normal. I quote from notes made in 1903, in Bontoc pueblo, a town of mountain people:

"Twenty percent of the adults have abnormal feet. The most common and the most striking abnormality is that known as *fá-wing;* it is an inturning of the great toe. *Fá-wing* occurs in all stages, from the slightest spreading to that approximating forty-five degrees.[1] It was found widely scattered among the barefoot mountain tribes of northern Luzon. The people say it is due to mountain climbing, and their explanation is probably correct, as the great toe is used much as is a claw in securing a footing on the slippery, steep trails during the rainy season. *Fá-wing* occurs quite as commonly with women as with men. This deformity occurs in one or both feet, generally in both if at all. An enlargement of the basal joint of the great toe, probably a bunion, is also comparatively common. It is not improbable that it is often caused by stone bruises, as such are of frequent occurrence; they are sometimes very serious, disabling a person many days at a time."

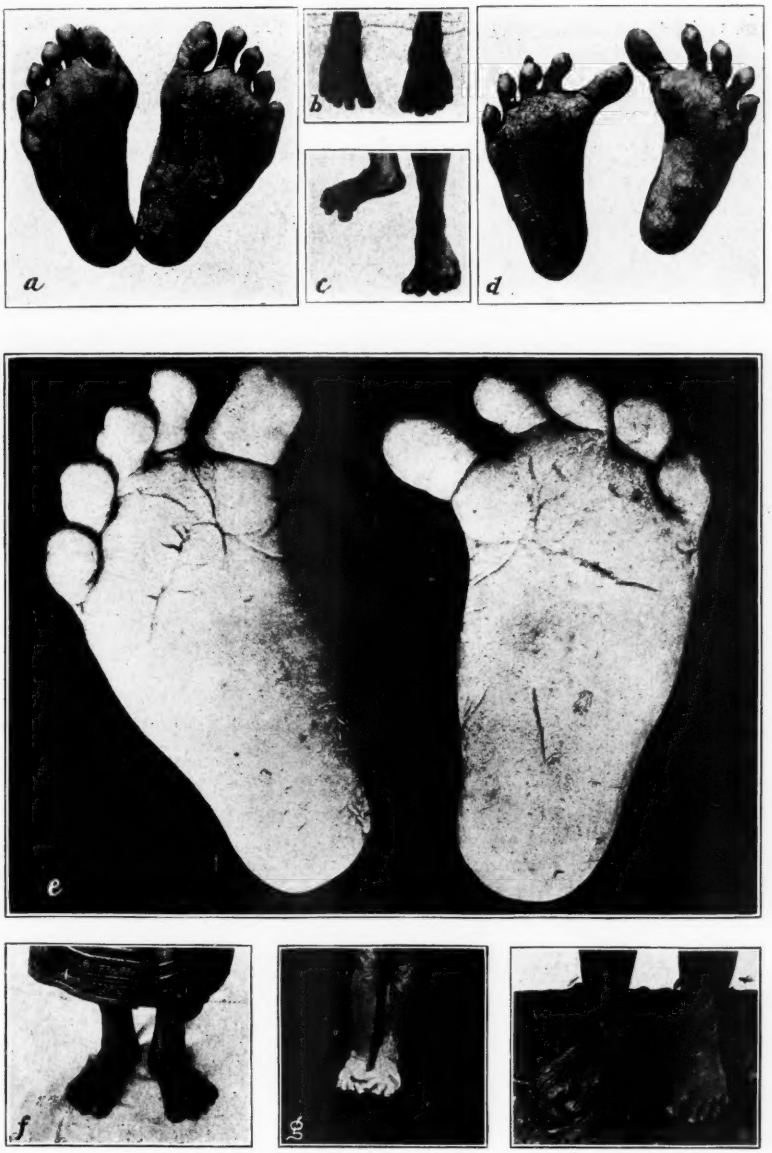
This bunion deformity is shown in plate XXXIII, *a*.

Not one percent of the Bontoc people have ever seen the ocean, or any water navigation, and none of the people of Lepanto-Bontoc province, or, indeed, of any of the Igorot provinces, have any form of water transportation; so water transportation has in no way been the cause of their splayed feet.

In March of the year 1903, during a residence among the Bontoc Igorot people, one of them, a servant of ours, received such an injury to the basal joint of his great toe from a rock in the trail that he was unable to stand on his feet for ten days. The inflamed wound finally broke and considerable pus ran from it. The injured man immediately moved from the town in which we were then living, and I have not seen him since; but he and others in the town said that his great toe would probably be spread somewhat from the others in a short time.

Some of the coastwise people say that the splaying of their feet is frequently caused by tree-climbing — a reasonable explanation, as they climb cocoanut trees by walking up them with their great toes and the tips of one or two of their smaller toes thrust in small notches cut in the trunk. The majority, however, maintain that they have no knowledge of the cause of the inturning toes, except that it is due to working. This refers to all kinds of work, but

[1] The case of extreme splaying mentioned in the last paragraph had not been discovered when this note was made.



FILIPINO FEET

a, Feet of Igorot man of Bontoc province, Luzon (the "bunion foot"). *b*, Feet of Guiangan man, Davao province, Mindanao (slightly splayed). *c*, *d*, *g*, Feet of Igorot men, Bontoc province, Luzon (badly splayed). *e*, Feet of Igorot man, Benguet province, Luzon (badly splayed). *f*, Feet of Guiangan woman, Davao province, Mindanao (probably normal). *h*, Feet of Igorot woman, Bontoc province, Luzon (slightly splayed)

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especially to their various forms of agriculture; it means simply that splaying is due to being much on one's bare feet while toiling.

Some people who rides horses, as, for instance, the Sulu Moros of the Jolo archipelago and the Lanao Moros in the vicinity of Lake Lanao in Mindanao, have stirrups which they make in such a way that the upright passes between the great toe and the next, as shown in figure 21. This peculiar stirrup necessitates a spreading of the great toe from the others, and in some cases doubtless becomes the cause of some of their abnormal feet.

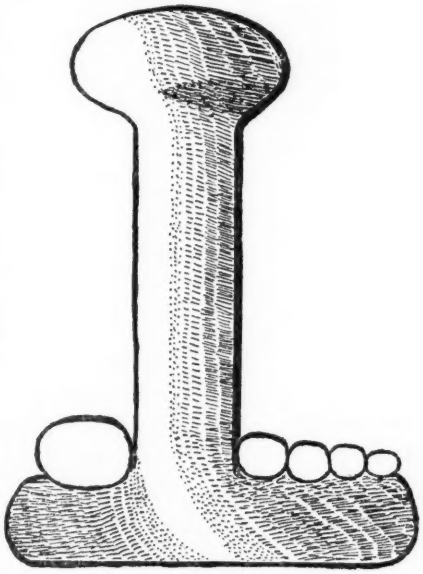


FIG. 21. — Moro wooden stirrup.

On reading Dr Skinner's article I was interested to know more accurately the effect of the casco on the feet of its human propellers; but not being satisfied with my own cursory investigation in one place, I sent two clerks — Tagalog men of Manila — to study at the same hour the two most important water-ways of Manila, namely the Pasig river and the Binondo canal. Thirty-one cascos were examined, averaging six bugadores, or human propellers, each, making a total of 186 men. Of these there were only three whose toes were spread even as much as shown in figure 22, *b*. Those similiar to the one shown in *e* of the same figure were not counted, since they are so common in Manila as to have been considered by the two observers not as deformed but as natural feet.

Everywhere in Manila there are men and women with splayed feet who have never worked on cascos. Three women in Manila,

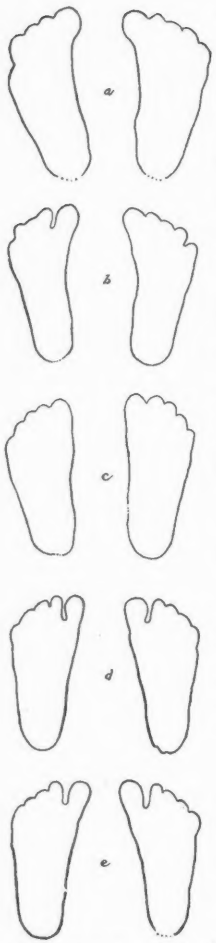


FIG. 22. — *a*, *c*, Feet of Sakai men, Malay peninsula; *b*, Feet of Sakai woman; *d*, Feet of Tagalog man of Manila, P. I. (normal); *e*, Feet of Pampango man of Pampango province, Luzon (beginning to splay; it shows the slight change from the normal, *d*).

whom I have just met on the street and with whom I have spoken, have toes that turn inward greatly, and none of them could give a reason for the abnormality.

I do not believe that this peculiar foot is hereditary. I have never seen it in children under nine or ten years of age, and many inquiries have failed to reveal babes or small children with inturning toes.

Not only are splayed feet common in the Philippines, but they seem to have been found sufficiently common elsewhere in the Orient to have been noted by men of science. I quote Deniker[1] to this effect:

"We cannot enlarge on the exterior characters: . . . on the more or less diverging big toe which is remarked among the majority of peoples of India, Indo-China and the insular world dependent on Asia, from Sumatra to Japan," etc.

Figure 22, *a*, *b*, *c*, shows three pairs of feet of the Sakai people of Malay peninsula — a wild mountain people who partake of the characteristics of the Negrito and the Malay. Two are much splayed, while the other might easily become so.[2]

From the foregoing facts it would appear that splayed feet, similar to those observed among the bugadores in the Philippines, are found over a large part of the area covered by men who possess to a greater or lesser degree the blood of an ancestral Asiatic people who may be called the Primitive Malayans. These

[1] Deniker, *The Races of Man*, London, 1900, pp. 94–95.

[2] *Journal Anthr. Inst. Gr. Brit. and Ireland*, vol. XXXII, pp. 142–152, 1902; "Some Anthropological Results of the Skeat Expedition to the Malay Peninsula," by Laurence H. Duckworth.

modern peoples occupy not simply the territory spoken of by Deniker, but they are also well spread over the Pacific area.

It appears from instances cited in this paper that the abnormality may be due to a definite injury to the basal joint of the toes, but is most often due to such constant activity as gradually and usually unconsciously spreads or turns the toes inward. These facts agree with Dr Skinner's conclusion that the splayed foot is not due to heredity; but they do not agree with his opinion that it is the result of the particular occupation of poling the casco, and there is no evidence to show that it is "an attempt on the part of nature to adapt these people to their occupation."

It is believed that there is a tendency among the various offspring of the Primitive Malayans toward splaying of the feet. This is probably due to a weakness of the basal joints of the toes, coupled with the fact that the toes are naturally in, or very near, a straight line with the inside of the foot, rather than inclined toward the outer side. The feet of Chinamen in the Philippine islands, who do as much toiling, barefoot, as the Filipinos, do not appear to be splayed. I fail to find any with the toes inturning at their bases; there are many with the great toe somewhat separated from the others, but this spreading I believe is likely the result of unshod feet that constantly bear the body of a hard-toiling pedestrian. Since the natural position of Filipino toes is as stated, special habitual efforts, such as walking up-hill, over rough or slipping ground, or with the weight against a casco pole, or horse-back riding with Moro stirrups, would tend to produce the particular foot under discussion, provided the tendency to weakness of the basal joints prevails. When we see that this abnormality occurs commonly, though not hereditarily, among men spread over such an extended area and following such varied pursuits as those of mountain pedestrians, agricultural laborers, coastwise tree-climbers, horsemen, and rivermen, the safest conclusion to draw regarding its origin seems to be that it is the result of various causes, most of which further or accentuate a natural tendency, and that it is not the result of any one occupation, that, for instance, of propelling the casco.

THE ETHNOLOGICAL SURVEY FOR THE PHILIPPINE ISLANDS,
MANILA, *May 31, 1905.*

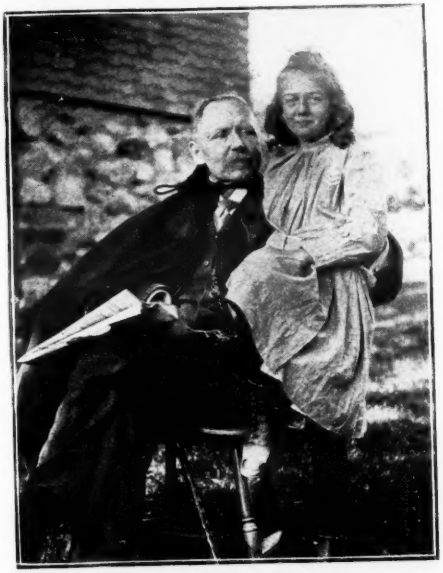
IN MEMORIAM: WASHINGTON MATTHEWS

Washington Matthews, soldier, surgeon, anthropologist, poet, was born in Killiney, county Dublin, Ireland, July 17, 1843, and died in Washington, D. C., April 29, 1905, in his sixty-second year.

Killiney, the little village in which Dr Matthews first saw the light, is one of the prettiest suburbs of Dublin, a few miles south from the city, with the blue waters of the bay in front and the blue mountains of Wicklow behind. It is locally noted for its ancient ruined church, dating back to the sixth century, and for its gray stoned cromlech, the "Druids' Judgment Seat," linking the present to the dim prehistoric past. In a letter written shortly before the end, he says of the old home place: "In Ireland, residences with grounds around them usually have proper names, a custom which, in America, prevails more in the south than in the north. The house I was born in, still standing ten years ago, was named Glenalua (Gleann-a-luaighe), or 'Valley of Lead.' There was a lead mine near there in the ancient days. It was exhausted years ago, but they still occasionally find small fragments of lead ore when quarrying around Killiney."

Dr Nicholas Blayney Matthews, father of the subject of our notice, was himself a leading physician and university graduate in medicine. With that admiration for free government which makes every Irishman half an American, he named the boy Washington. While the child was still in infancy, the mother, formerly Miss Anna Burke, died, and the father, finding the old walks lonely without the companion of his love, closed up his affairs at home and came to America in 1847, bringing his two motherless boys with him. After a short residence in Wisconsin, then a territory, he returned with his children to Ireland, where they remained about three years before coming out again to this country, this time to settle in Dubuque, Iowa. Here the boy grew up, having his first education in the common schools, and at seventeen began the study of medicine under his father, with a course of lectures at the medical department of the University of Iowa, from which he

Photographed in 1877.



Photographed at Gloucester, Mass., 1904.
(Courtesy of *Out West.*)

WASHINGTON MATTHEWS

received the degree of M.D., May 28, 1864, in his twenty-first year.

The civil war being then in progress, Dr Matthews at once volunteered for service, and was assigned to duty as acting assistant surgeon at Rock Island, Illinois, looking after the Confederate prisoners in the government hospital at that place. He remained here until mustered out at the close of the war in May, 1865, when he was immediately appointed to the regular army and received an assignment as post surgeon at Fort Union, Montana. Here he first came in close contact with Indians, whom thenceforth he made a life study, at a time when they were still wild and unsubdued.

His subsequent assignments, as given in the army records, are as follow: Post surgeon, Fort Berthold, N. D., 1865–66; in the field with General Terry's expedition, Dakota, 1867; at Fort Stevenson, N. D., 1867–68; post surgeon, Fort Rice, N. D., 1869–70; post surgeon, Fort Buford, N. D., 1870–72; post surgeon, David's Island, New York harbor, November to December, 1872; post surgeon, Willet's Point, New York harbor, December, 1872 to May, 1873; post surgeon, Fort Wood, New York harbor, to June, 1873; post surgeon, Fort Sullivan, Maine, to November, 1873; post surgeon, David's Island, New York harbor, to November, 1874; at Fort Hamilton and Fort Wood, New York harbor, April, 1875; ordered to Department of California, April 23, 1875; Alcatraz island, San Francisco harbor, Cal., June, 1875 to April, 1876; post surgeon, Camp Independence, Cal., to July 10, 1877; in the field with expedition against Nez Percé Indians, July to October, 1877; in the field with expedition against Bannock Indians, 1878; at Camp Bidwell, Cal., to June 30, 1880; ordered to the Department of the Missouri, September 7, 1880; post surgeon, Fort Wingate, N. Mex., October, 1880 to April, 1884; Army Medical Museum, Washington City, 1884–90; Fort Wingate, N. Mex. (second assignment), 1890–94; retired for disability contracted in line of duty, September 29, 1895. He was commissioned as assistant surgeon in 1868; as captain and assistant surgeon in 1871; and as major and surgeon in 1889.

On his first assignment to duty on the upper Missouri in 1865, Dr Matthews at once became deeply interested in the native tribes

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of that region and soon began the study of the allied Hidatsa (Minitari), Arikara, and Mandan, in the vicinity of Fort Berthold, with whom he remained in close touch for much of the next six years. He brought to this study all the sympathetic enthusiasm of a young man and the exact method of a trained scholar with such good result that he mastered the Hidatsa language — we use the word *mastered* with its full significance — so that, when under the disheartening misfortune of the entire destruction of all his manuscript notes and his library by the burning of his quarters at Fort Buford in 1871, he was able to rewrite from his inner knowledge the "Grammar and Dictionary of the Hidatsa" and the "Hidatsa (Minnetaree) English Dictionary," which remain to-day the monument and authority on this language. A second and amplified revision of these works was issued by the U. S. Geological and Geographical Survey in 1877 under the title "Ethnography and Philology of the Hidatsa Indians." It was characterized at the time by a competent authority as the most important memoir on our aboriginal languages that had appeared since the great Dakota dictionary of Riggs, twenty-six years before.

In 1877 Dr Matthews married Miss Caroline Wotherspoon, daughter of Dr A. S. Wotherspoon, U. S. Army. In the years thenceforward, whether on the remote frontier or in eastern cities, she was ever his closest companion, his most helpful and interested assistant, his best inspiration, and his tender nurse at the end.

In 1880, at the suggestion of Major J. W. Powell, director of the Bureau of American Ethnology, he was transferred to duty at Fort Wingate, N. Mex., in the Navaho country, where he remained four years, with a second assignment of four years more in 1890–94. Here, a thousand miles removed from the distractions of civilization, all his spare time and energy, apart from his duties as post surgeon, were given to the study of the great Navaho tribe, at that period uncontaminated heathens, as he himself has happily expressed it. The greater part of this work, of which the first fruits were given to the Bureau of American Ethnology, was entirely a labor of love, at his own personal expense, involving the hiring and usually the feeding of Indian informants and interpreters, with frequent horseback journeys over a difficult country to witness ceremonies,

identify sites, or collect plants. The results were a marvelous revelation. His "Mountain Chant" and "Prayer of a Navaho Shaman" awakened the scientific world to the possibilities of Indian myth and ritual, and created an interest in the subject which has never slackened. His technologic studies in the same field, as embodied in his papers on Navaho weaving and silverwork, and his botanic and medical studies, chiefly still in manuscript, are of equal importance and alike bear the stamp of careful exactness. The promise held out by his earlier papers has been amply fulfilled by his later and larger works, "Navaho Legends," published as a memoir of the American Folk-Lore Society in 1897, and "The Night Chant," published as a memoir of the American Museum of Natural History in 1902.

Of his Navaho studies it has been well written: "The characteristics of his work as an ethnologist are patience, thoroughness, and safety. He does not imagine, but stops with what he knows, and it is safe to be said that his work will stand practically final for the specialty he undertook. Detail students may yet add to our specific knowledge, for his pet tribe will last a long time, but the last generic authority on the Navaho will be, as it is now, Washington Matthews."

For a term of about six years, 1884–1890, he was on duty at the Army Medical Museum in Washington, during which period he gave special attention to the study of craniology and anthropometry, subjects at that time hardly considered by American science. Within the same period also he made two important investigating expeditions to the Southwest. The first of these was undertaken in the fall of 1884, under the auspices of the Bureau of American Ethnology, to the Navaho country, where by previous arrangement with the priests he was privileged to witness the whole secret rite of the Night Chant. The other, in 1887, was in connection with archeologic investigations in the Salt river valley of Arizona, under the auspices of the Hemenway Southwestern Archeological Expedition. His medical and anatomic writings, chiefly during this time, include a study of consumption among Indians, several notable papers on methods of cranial measurement, and a monograph on "Human Bones of the Hemenway

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Collection," published as a memoir of the National Academy of Sciences in 1893. In the summer of 1886 he took an opportunity to revisit the places of his childhood in the old land across the sea. In the summer of 1888 he was one of the three physicians selected to attend General Sheridan, lieutenant general of the army, in his last illness. His associates were Dr Robert O'Reilly, now surgeon general, and Dr H. C. Yarrow, both of Washington.

In 1892, while serving his second assignment at Fort Wingate, he was stricken by the insidious disease which eventually caused his death. Two years later, when it was evident that his day of active service was past, he was recalled to Washington. On September 29, 1895, in accordance with the verdict of an examining board, he was retired for disability.

The disease slowly progressed, but although for several years before the end came he was an almost total physical wreck, unable to go about alone, cut off from conversation, frequently suffering intense agony, and with no hope of recovery, yet he kept his mind clear and his heart brave and warm to the last, and some of his best and most monumental work was produced during weeks of pain when he was scarcely able to move without assistance. At last the strength of what was once a magnificent frame was utterly sapped. While writing at his desk he attempted to rise unaided, but the effort was too great. He fell to the floor, sustaining such injury that medical science was powerless to help, and his life passed away a few weeks later. He was buried as a soldier at Arlington where rest his oldtime friends and associates, Sheridan, Mallery, Bourke, Coues, and Powell. He is survived by his wife, by several relatives in Iowa, and by his father's sister in Ireland.

Dr Matthews took an active interest in scientific things and was a member of the American Anthropological Association, American Association for the Advancement of Science, American Climatological Association, Association of American Anatomists, Anthropological Society of Washington, Philosophical Society of Washington, National Geographic Society, American Folk-Lore Society, Chicago Folk-Lore Society, and Torrey Botanical Club. He served as vice-president of the Chicago Folk-Lore Society in 1894, and as president of the American Folk-Lore Society in 1896. In

1888 he received the degree of LL.D. from his own university in recognition of his philologic work. Besides a fluent knowledge of Hidatsa and a good acquaintance with Navaho, he had at command both German and Spanish, while his English was always a model of literary style. He was an expert botanist, a skilful mathematician, and an artist of some ability in oil colors. Those familiar with his Indian ritual interpretations and with his sometimes concealed identity knew him for a poet even without the proof offered by the following little gem written at Gloucester, Mass., a short time before his death:

THE CONTRAST [1]

Dark days around the Gloucester moors
Have come again.
With winds that wail and mists that trail
O'er land and sea;
But darker days are in my soul,
Sad is my lot,
Despair and pain are with me here —
Alice is not.

Bright days around the Gloucester moors
Are now with me;
Clear is the sky and fair the land
And calm the sea.
The days within my soul are bright,
And life is dear;
For, shining like the sun's own light,
Alice is here.

Dark days around the Gloucester moors
Have come again.
With northeast gales and slanting sails,
And drifting rain.
Sad are the echoes in my soul
As breakers' moan,
And like the rain my teardrops fall —
Alice is gone.

Dr Matthews was a prolific writer, and besides the more important works already mentioned, was the author of a large number of shorter papers, ethnologic, medical, and general, without counting

[1] Printed by courtesy of Mr Charles F. Lummis, editor of *Out West*, Los Angeles, Cal., in which magazine (May, 1905) the verses, together with the accompanying recent portrait of Dr Matthews, first appeared.

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numerous reviews and notes in the journals in which he was most interested. He left a large body of undigested manuscript material, relating chiefly to the Navaho, Modoc, and Paiute, which is now in possession of the University of California.

The world knows and will increasingly appreciate the scholar, but only those who were near to him can understand the rare personality of the man. Physically, mentally, and morally, Washington Matthews was of the highest type of manhood. Of fine physique and soldierly bearing, with a strong and well-modulated voice, carrying perhaps just a little roll to make it all the more musical, he was one to attract the attention of any audience and hold it to the close. His thought was always well ordered, and the expression so gracefully chosen that each word fitted to its purpose as perfectly as the pieces of an Italian mosaic. By a faculty of mingled sympathy and command he won the confidence of the Indian and the knowledge of his secrets, while by virtue of that spiritual vision which was his Keltic inheritance, he was able to look into the soul of primitive things and interpret their meaning as few others have done. He had a deep sense of the physician's mission in the relief of human suffering. With a modesty that shrank from publicity and despised notoriety, he was without jealousy and rejoiced always in the successful reputation of others. One of his last utterances in life was an expression of pleasure at a merited testimonial to a fellow worker. Of sensitive honor and high courage, he was at all times immediate and unsparing in denunciation of anything that savored of cowardice or dishonesty. His humor was keen, without the sting of sarcasm, and so spontaneous that even his serious discourse was often lightened by the play of fancy.

And now, though the golden bowl be broken, not yet shall the silver cord be loosed that held us in affection to one of whom it can be said in full measure —

> "His life was gentle, and the elements
> So mix'd in him that Nature might stand up
> And say to all the world, 'This was a man!'"

J. M.

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SOME MORE ABOUT VIRGINIA NAMES

By WILLIAM WALLACE TOOKER

In regard to Mr William R. Gerard's last article, in the American Anthropologist for April–June, 1905, written in answer to mine in the issue for October–December, 1904, I here reiterate the statements in my former essay. I cannot, owing to the limited space at my disposal in this final word, heed all his allegations and mistakes, so will call attention to only a few, which will give some indication of the character of the remainder.

In the first name, *Winauk*, discussed by Mr Gerard, he makes eight blunders: (1) In rejecting Trumbull's derivation. (2) Both Smith and Archer call it Point *Wynauk*, or *Weanocke*, as a rule rather than the contrary. (3) Archer never called it "Careless point." (4) Careless point was on the opposite side of the river. (5) He does not quote Archer correctly, who says (Smith, p. li): "We crossed over the water to a sharpe point, which is a parte of *Winauk* [i. e., under that jurisdiction] on Salisbury syde (this I call careless point)." "Salisbury side" was the south side of James river, while Wynauk was on the north or "Popham side." (6) His remarks as to dialect and the quotation from Trumbull in the footnote are erroneous, as if the Powhatan and Massachusett did not belong to the same language. (7) *Wean-ohke* can be used without the preposition *-ut* or *-it*, as many place-names show. (8) No Indian would have called the place *Winach*, 'sassafras' or 'sweet wood,' without a locative of some sort, as Algonquian nomenclature requires.

Chickahominy. — Mr Gerard cannot find a single reference to a town called "*Tshikĕhāmĕn*."[1] The verb could not be used in this form as a place name, because it does not imply a fixed location. It would be as appropriate to apply to a place the English verb "to

[1] *Manosquosick* was the first town on the river visited by Smith, but not named on his map, for *Meyascosic* of the map is not the same town. The proof of this is very positive.

sweep." My notes, made more than ten years ago, when I wrote the results of my study of "Chickahominy," show that I rejected this verb, along with others, in a better application, viz., *Tschikham-aney-os*, 'they sweep the path,' which I thought at the time might allude to their warlike habits when on a trail, for the words "lustie and daring people" were applied to the Indians of the river collectively, not to the inhabitants of any one town.[1]

Werowacomaco. — Mr Gerard greatly confuses the derivation of this name. He does not accept Strachey's[2] and Trumbull's interpretation, 'a king's house,' but says it means 'fertile land,' and adds some remarkable information which is inapplicable. He does not believe in searching the Natick for the meaning of Powhatan names, but goes there for his altered *Wenauohkomuk* (Cotton); *Weenauohkomuk* (Eliot) = *weenau-ohke-muk*, 'where the land is fat, rich, good,' which he gives as the cognate of *Werowacomaco*, which it is not, in root, prefix, suffix, or anything else. The termination *-muk* is the third person singular of the present conditional passive, 'when or where a thing is,' — a termination of common use by Eliot, who also gives *matohkomuk* (= *mat-ohke-muk*), 'where the land is lean, poor,' thus proving the etymology.[3] *Comaco* appears in several Powhatan names, and is the cognate of the Natick *komuk* = Narr. *commock*, 'a house,' 'a place enclosed.'[4] He further remarks: "The name for a native ruler among the Virginians, variously written *wiróans*, *werowance*, *weroance*, and *wyroaunce*, means 'he is rich.'" This also is contrary to fact, as likewise is the statement that it is from the same stem as *weenau*, as it really comes from another verb found in (Narr.) *wauóntakick*, 'wise men,' 'counsellors,' (Lenape) *wewôátank*, 'the learned' or 'the wise,' whence (Lenape) *wewôánsu* (= Powhatan *wérówanse*), 'he is wise.' Smith remarks (p. 377):

[1] Some of my reasons for rejecting the verb were: (1) Strachey has it in *tsekehica*, 'to sweep,' which led me to believe that he never recognized any sounds in the word *tseke*, belonging to *Chickahominy*. (2) *Tseke* is a root formed by onomatopœia to represent the action of a harsh instrument in rubbing up dust or dirt, likewise the hair of animals and the scales of fish.

[2] The name was probably translated for him by Kemps, the Indian who gave him most of his Powhatan names.

[3] Eliot's constructive forms are mostly omitted from Trumbull's *Natick Dictionary*.

[4] In a note Mr Gerard says: "*Winomin*, 'the grape,' means 'prolific fruit,'" whereas it really means 'vine berry.'

"But this word *Werowance*, which we call and construe for a king, is a common word, whereby they call commanders." Thus we have *Werowacomaco*, 'the king's house.'[1]

Pocohiquara, Powcohicora. — Algonquian names of places and objects are all descriptive and admit of no ambiguity or inference; yet Mr Gerard's translation of this term as 'it is brayed,' when modified by nothing, is decidedly ambiguous, as it does not inform us what was 'brayed,' hence such a translation might refer to almost anything except "milk made of walnuts," to which the name was actually applied. My interpretation supplied the missing link, as it furnished an etymology descriptive of how the "milk" was "made of broken shells, skins, or bodies," leaving nothing for supposition. The second element, *-hiquara* or *-hicora* = (Natick) *-hogk8nie*, (Lenape) *-hackeney* or *-hocquina*, is from a root of common use meaning 'to cover,' 'to clothe,' as 'skin,' 'body,' 'shell,' 'husk,' 'scales' (of fish), etc.; hence the "milk" was "made of broken or pounded shells."[2]

Moëkanneu. — There are insurmountable objections to Mr Gerard's etymology and translation ('he eats bones') of this term. First, Algonquian substantives in the plural must have their verbs in the plural. Second, the word for 'bone' in all Algonquian dialects is classed as an inanimate noun, hence it could not be used with the Algonquian verb 'to eat' something animate, which in the Lenape has the form *mohoan* 'to eat'; *mohoeu* 'he eats'; *mohowak* 'they eat.' In the same dialect, things inanimate have their plural in *-all*, (Natick) *-ash*, hence 'they eat bones' would be rendered inanimately *mitzowak wochganall*, which Eliot (Zeph., III, 3) gives us correctly, and in the inanimate form *meechuog wuskonash*, 'they

[1] Mr Gerard does not quote Smith correctly. It was not *Werowacomaco* that was in breadth two miles, but the water (Purtons bay). Smith (p. 21) writes: "*Weraocomaco* is vpon salt water in bredth two myles, and so [the river] keepeth his course without any tarrying."

[2] Heckewelder (*History*, p. 194) gives us the best account of the process: "They pound the nuts in a block or mortar, pouring a little warm water on them, and gradually a little more as they become dry, until at last, there is sufficient quantity of water, so that by stirring up the pounded nuts the broken shells separate from the liquor, which from the pounded kernels assume the appearance of milk. If the broken shells do not freely separate by swimming on the top or sinking to the bottom, the liquor is strained through a clean cloth, before it is put into the kettle."

gnaw (eat) bones.'[1] So Zeisberger could not by any possibility have written *moëkanneu* for *mohowak wochganall*, for the combination would have been grammatically wrong. The radical *-kan*, in Cree and other dialects, when coalesced with the verb indicates something made of bone. My etymology describes the traits of a 'wolf' dog, as noted by many visitors to Indian villages, viz: *moëkanneu* = (Natick) *maü-konáeu*, (Narr.) *moü-kanew*, 'he cries or mourns by night,' from *maü* 'he cries,' 'he mourns,' *nukonáeu* or *nokanew*, 'by night' or 'in the night,' as in composition the prefix is discarded.[2] The correctness of this etymology, no matter how "extraordinary" it may seem to Mr Gerard, is substantiated by the adverbial termination *-eu*, which does not belong to the verb, for that is already in the third person singular, but to the adverb that governs the verb. To quote Mr Gerard: "All this is simple, and of so very elementary a character that it did not occur to me to furnish an analysis of the word '*Moëkanau*' in my article."

Mr Gerard's article indicates his lack of critical analysis of the Algonquian language, and he is so hasty in his conclusions that his etymologies are rendered worthless. This is conspicuously shown by his statement: "In Narragansett, by incorporating the word *ättóku* 'deer' we have *moättókweu*, 'he eats deer,' and, by changing the intransitive to a verbal adjective suffix we have *moattókwus*, 'deer eater,' a name for the black wolf, called also deer wolf." Now, the Narragansett word "*moattóqus*,[3] a black wolf," is simply from *mówi* 'black,' and *nattóqus* 'a wolf'; *nattóqussuog* 'wolves,' i. e., 'they seek their prey,' which describes their chief characteristic. Therefore there is nothing whatever in the name indicating 'eating' or 'a deer,' consequently there can be no such changes in grammar as he asserts.

Wunnauanounuck. — He says further: "What may be stated as absolutely certain is that *wunnau* does not mean 'hollow vessel,' and that *anounau* does not mean 'to carry.'"

Consulting Roger Williams' Key, we find: "*Wunnauanoûnuck*, a shallop. *Wunnauanoûnuckquese*, a skiff. Obs: Although them-

[1] Eliot almost always writes it '*wuskonash*' (3d pers. sing.), his bones.

[2] See Zeisberger's *Grammar* for 'one night,' etc.

[3] Compare *môaskug*, 'black snake,' in same chapter.

selves have neither, yet they give them such names, which in their language signifieth carrying vessels." Can this translation by Williams be ignored, when we learn that *wunnàug* is a 'shallow vessel,' like a 'tray' or 'dish,' and that *-anounau* = (Natick) *konunaü* 'he carries or bears,' *kóunuk* 'when it carries' as a carriage or anything that bears burdens?

I could extend my observations on Mr Gerard's article, but "why multiply examples?"[1]

SAG HARBOR,
NEW YORK.

[1] Mr Gerard's remarks on the grammar of the language are seemingly his own ideas, and are not based on any authority on the subject. For instance, under *Attaangwassuwk* he is contradicted by Eliot, who has (Job, XXXI, 2) *nanepaushadt wosumoe* 'the moon is bright, shining'; *nepauz wohsum* (Cotton) 'the sun shines,' and so we can have *anogkus wohsumuk* 'he appears shining.' His remarks under other words are equally erroneous. He seemingly does not hesitate to make any change in any notation, whether it be Williams', Eliot's, or Zeisberger's. Brinton's remarks will apply: "Zeisberger showed the Delaware as it actually was spoken, though perhaps not as scientific linguists think it ought to have been spoken."

BOOK REVIEWS

Neolithic Dew-ponds and Cattle-ways. By ARTHUR JOHN HUBBARD, M.D., and GEORGE HUBBARD, F.S.A. *With illustrations.* London: Longmans, Green & Co., 1905. 8°, vii + 69 pp.

General Pitt-Rivers, Mr E. H. Willett, Canon Greenwell, and others have made us acquainted with the numerous earthworks on the Sussex Downs. The most notable of these works is that of Cissbury, some three or four miles north of Worthing. The Cissbury Ring, roughly oval in shape, enclosing an area of 60 acres, was thought by the early writers to be of Roman origin, but Col. A. H. Lane Fox (General Pitt-Rivers) proved it to be the work of the neolithic inhabitants of Britain.

The Cissbury embankments, pierced at intervals by openings, suggest the earthworks of our own mound-builders. The inner embankment is the larger, and rises 40 feet above the ditch that separates it from the outer.

These hill fortifications generally cover the most elevated points of the Downs, those at Chanctonbury, a short distance north of Cissbury, being 800 feet above sea-level. The magnitude of the works implies a considerable population and a settlement covering a time period of no mean length. The question, therefore, of water supply for such high elevations is one of moment. The Messrs Hubbard, in an attractive little volume, have attempted to solve this problem.

Some distance below the Cissbury Ring, and on opposite sides of the summit, are two artificial depressions — one at present dry, the other (on the north) filled with water. The authors call them "dew-ponds." The mode of construction and thermodynamics of a dew-pond are best described in the authors' own words:

"There is still in this country at least one wandering gang of men (analogous to the mediæval bands of bell-founders, masons, etc.) who will construct for the modern farmer a pond which, in any situation in a sufficiently dry soil, will always contain water, more in the heat of summer than during the winter rains. This water is not derived from springs or rainfall, and is speedily lost if even the smallest rivulet is allowed to flow into the pond. The gang of dew-pond makers commence operations by hollowing out the earth for a space far in excess of the apparent requirements of the proposed pond. They then quickly cover the whole of the hollow with a coating of dry straw. The straw in its turn is covered by a layer of well-chosen, finely-puddled clay, and the upper surface

of the clay is then closely strewn with stones. Care has to be taken that the margin of the straw is effectively protected by clay. The pond will gradually become filled with water, the more rapidly the larger it is, even though no rain may fall.

"If such a structure is situated on the summit of a Down, during the warmth of a summer day the earth will have stored a considerable amount of heat, while the pond, protected from this heat by the non-conductivity of the straw, is at the same time chilled by the process of evaporation from the puddled clay. The consequence is that during the night the moisture of the comparatively warm air is condensed on the surface of the cold clay. As the condensation during the night is in excess of the evaporation during the day, the pond becomes, night by night, gradually filled.

"The dew-pond will cease to attract the dew if the layer of straw should get wet, as it then becomes of the same temperature as the surrounding earth, and ceases to act as a non-conductor of heat. This practically always occurs if a spring is allowed to flow into the pond, or if the layer of clay is pierced."

The dried up dew-pond already mentioned bears a definite relation to the neolithic settlement at Cissbury. The origin of both, therefore, may be presumed to date from the same epoch, a presumption confirmed by the fact that the dew-pond in question "appears to be thoroughly fortified by a surrounding ditch and earthen wall, precisely similar to, though on a lesser scale than the great prehistoric earthworks on the top of the Downs."

Two roadways, roughly parallel and in places deeply cut, lead from the eastern entrance down to the dew-pond on the north. These are called "cattle-ways," and form another link in the chain of evidence tending to prove that the earthworks and dew-ponds are contemporary. Another bit of evidence is that remains of a "dwelling" similar to those within the Ring are sometimes found adjacent to a dew-pond. These so-called dwelling sites marked by gentle depressions in the surface of the ground are, however, primarily the sites of ancient pits sunk in neolithic times to depths of from 15 to 30 feet through the chalk in search of seams of flint suitable for the manufacture of implements. As soon as flint of the desired quality was reached, side chambers and horizontal connecting galleries were opened for the further exploitation of the flint nodules. Similar works are found at Grime's Graves near Brandon, Suffolk, and at Spiennes, Belgium. Pits, chambers, and galleries have long since been filled by débris of one sort and another, and possibly may have been utilized from time to time as habitations.

There is a dew-pond still full of water near Chanctonbury Ring. It is surrounded by protecting earthworks within which are the remains of a so-called "dwelling" or "watch-house." The latter is evidently the site of a shaft sunk for the purpose of exploiting flint from the Chalk.

Part II of the book treats of Maumbury Rings and Maiden Castle, both near Dorchester. The Maumbury earthwork "appears to us to differ entirely in purpose from the ordinary neolithic hill settlements with which it is certainly contemporary." Its orientation was carefully determined and found to coincide accurately with that of Stonehenge. It is in all probability a prototype of the great stone structure erected on Salisbury Plain and suggests the practice of sun worship in the neolithic period.

There are no dew-ponds at Maumbury Rings, but there is one within the ramparts at Maiden Castle. The area enclosed by the Rings at Maiden Castle is from 40 to 50 acres in extent. The enclosure is protected by a series of great embankments, even now 50 to 60 feet high; and the "maze of stupendous earthworks by which the entrance is guarded baffles description."

Part III deals with "cattle-tracks," a term employed to indicate the routes selected by the herds in contradistinction to the term "cattle-ways," used in the sense of roads built by man for the use of his cattle.

Two of the most important systems of cattle-tracks are at Ogbury Camp near Stonehenge and at Figsbury Ring between Salisbury and Stockbridge. At Ogbury Camp the cattle-tracks are connected with dew-ponds, as was the case at Cissbury and Chanctonbury.

Much emphasis is placed on the value of domestic herds to these neolithic settlers and the necessity of protecting their flocks as well as themselves from wild beasts and other enemies. The illustrations are all half-tones from excellent photographs and serve their purpose admirably. To have supplemented them with a few ground-plans and sections would have been of material assistance to the general reader in obtaining a proper conception of the extent and meaning of the neolithic hill settlements and their relations to the so-called dew-ponds and cattle-ways.

GEORGE GRANT MACCURDY.

Antropometria Militare. RIDOLFO LIVI. Two volumes, 4°, with atlas. Rome: Preso il Giornale Medico del Regio E Sercito, 1896, 1905.

The first volume of the valuable work by Dr Livi on military anthropometry in Italy, which appeared with an atlas in 1896, has just been followed with a second volume, devoted more particularly to data of a demographic and biologic character. Volume I deals with the stature, color of the eyes and hair, cephalic index, and the facial characters of Italian conscripts, chiefly from a racial point of view; while the second volume is devoted to the consideration of stature, weight, thoracic circumference, etc., more from the standpoint of physiology and hygiene.

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The data on which the entire work is constructed were obtained by military medical examiners and are based on the examination of 299,355 recruits throughout Italy, of the classes from 1859 to 1863. In the author's investigations it was found, and is clearly shown, that physically the population of Italy is by no means homogeneous, but that it differs radically in the northern and southern parts of the peninsula, while the central provinces exhibit stages more or less transitional. The northern, and particularly the northeastern portions of the country — Venetia, for example — have a population of relatively higher stature, with higher cephalic index, and a relatively greater proportion of blonds than the southern provinces, Sicily and Sardinia, whose people are short and dark, with a tendency to dolichocephaly.

The highest average statures are: Venetia, 166.6; Tuscany, 165.6; Liguria, 165.5; Lombardy, 165.3 cm.; the lowest: Sardinia, 161.9; Basilicata, 162.6; Calabria, 161.1; Sicily, 163.5 cm. The cephalic index, which in the northern provinces ranges from 82.3 to 85.9, is in Puglia 79.8; in Sicily, 79.6; in Calabria, 78.4; and in Sardinia only 77.5. The percentage of blond-haired individuals ranges from 12.6 in Venetia to 7.2 in Emilia, in the north; but is only 5 percent in Sicily, 3.8 in Calabria, and 1.7 in Sardinia. On the whole the people of northern Italy are shown by the data to be allied to the Alpine and other northern races of whites (very probably including, in Venetia at least, the Slavs), while the southern Italians, the Sicilians, and the Sardinians belong chiefly to the Iberic or Mediterranean type.

The size of the chest, determined by the thoracic circumference, was found to differ widely; but in 50 percent of the subjects examined it ranged between 84 and 88 cm. The largest average chest is found in the northern, the smallest in the southern provinces, particularly in Calabria and Sardinia. Large stature in general was found to be associated with more ample thorax; but the increase in the size of the chest is inferior to the increase in stature. It should here be mentioned that the relation between the thoracic circumference, c, and the stature, $s[(c \times 100)/s]$, is incorrectly termed by the author "thoracic index." Like "cephalic index," "nasal index," and "orbital index," the term "thoracic index" should be restricted to an expression of the relations of measurements (preferably the bilateral and antero-posterior diameters) of the thorax, the part of the body indicated by the name; and in fact the term has already been employed for such relations. The index of Dr Livi is the chest-height index.

To return to the results obtained by the author, it is found that the

weight of more than 40 percent of the subjects ranged from 47 to 62 kg. (126 to 137 lbs.), and here again the average was higher in the northern than in the southern provinces. The average weight increased with stature, but the relative proportion (grams per cm., or, as the author expresses it, $100\sqrt[3]{w/s}$) diminishes slowly with increase in height. Excepting those whose stature falls below 167 cm., the weight of the American soldier, according to Gould's statistics, exceeds that of the Italian.

Among the various professions and trades, students and butchers attain the greatest average stature and weight, while barbers and tailors are the smallest. For many interesting details of a similar character the work itself must be consulted.

During the period of military service there is an increase in stature and weight, particularly in those who through malnutrition had been retarded in these directions; consequently from a physical point of view military service is beneficial.

A chapter of the second volume is devoted to the consideration of the diseases of soldiers and their distribution, geographically and professionally.

Dr Livi's work exhibits a vast amount of labor brought to a successful issue. The volumes are illumined with numerous diagrams, a valuable aid to the text. Both Dr Livi and the military authorities who have supported and encouraged him may be assured of a full and general appreciation of this service in the cause of anthropology.

A. HRDLIČKA.

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PERIODICAL LITERATURE

Conducted by Dr Alexander F. Chamberlain

[Note.—Authors, especially those whose articles appear in journals and other serials not entirely devoted to anthropology, will greatly aid this department of the *American Anthropologist* by sending direct to Dr A. F. Chamberlain, Clark University, Worcester, Massachusetts, U. S. A., reprints or copies of such studies as they may desire to have noticed in these pages. — Editor.]

GENERAL

Alsberg (M.) Krankheit und Descendenz. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, xxxv, 118–122.) Discusses the question whether there does not exist a coincidence or a relationship between the phylogenetic stage of evolution in an organ and a more or less pronounced disposition in the same to morbid changes, between the changes run through in the course of phylogenetic evolution and certain so-called "pathological phenomena," or "diseases." Dr A. considers the ribs, the vermiform appendix, certain glands and gland-like organs, anomalies of refraction in the human eye, rumination, etc., from this point of view.

Andree (H.) Kurzer Rückblick auf Richard Andrees literarische Tätigkeit. (Globus, Brnschwg., 1905, lxxxvii, 148.) Lists, with brief notes, chief publications, 1860–1904, which covered such topics as the Jews, metals among primitive people, anthropophagy, ethnographic parallels, deluge myths, folk-lore, votive offerings, etc.

Anthony (R.) Rapport de la commission nommée pour l'attribution du prix Broca, 1904. (Bull. Soc. d'Anthr. de Paris, 1904, v^e^ s., v, 589–590.) Prize divided between MM. Launois et Roy's *Études biologiques sur les géants* (Paris, 1904) and M. Demonet's MS. *Recherches sur la capacité vitale.*

Barchielli (A.) Variazioni del margine superiore dello sterno umano e loro significato. (Mon. Zool. Ital., 1904, xv, 54–61, 2 pl.) Gives results of examination of 162 sternums of adults and a few embryos. The *tubercula episternalia*, of which three cases occurred, are regarded by B. as rudiments of the episternum of the lower vertebrates.

Beddoe (J.) A method of estimating skull-capacity from peripheral measures. (J. Anthr. Inst., Lond., 1904, xxxiv, 266–283.) Discusses briefly various methods and adds "new proofs" with slight modification of author's process. Tables of measurements of Naqada, Romano-Briton, Vedda, Negro, Sumatran, Australian skulls. Pages 277–283 reply to article by Prof.[Pearson in *Biometrika* in criticism of B's scheme.

Bermbach (*Dr*) Ueber Pfeilgifte und vergiftete Pfeile. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, xxxv, 51–52.) Notes on arrow poisons and poisoned arrows in Asia and Indonesia (Ainu, Malays, Malaccans, etc.), S. America (Orinoco-Amazonian region, Chocos, Cayapas, Goajiros, etc.), Africa (East Africa, pygmies, Congo region, Bushmen, etc.). Snake poison is a wide-spread constituent. Vegetable poisons are obtained from aconitum, strychnos, antiaris, solanum. American poisons are *curari*, toad-poison, poison from corpses, etc. In parts of Africa spider-poison is employed.

Boas (F.) Some traits of primitive culture. (J. Amer. Folk-Lore, Boston, 1904, xvii, 243–254.) Discusses "the general lack of differentiation of mental activities." In primitive life religion and science, music, poetry and dance, myth and history, fashion and ethics, appear to us inextricably interwoven, yet, when we consider that all vestiges of similar forms of thought have not yet disappeared from our civilization, we can

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see how these phenomena may fall into an orderly array. Dr B. notes the association between traditional etiquette and ethical feeling (*e. g.*, sense of propriety, religious intolerance, food aversions, styles of dress) in modern life and compares them with analogous phenomena in primitive life (taboos, education, ritual, decorative art, etc.). The resistance to change is largely due to emotional sources, and in primitive culture emotional associations are the prevailing type. In civilization reasoning is able to modify activities having no emotional value, but "we cannot remodel, without serious emotional resistance, any of the fundamental lines of thought and action which are determined by our early education, and which form the subconscious basis of all our activities." The loss of conservatism accompanying the substitution, in the progress of primitive culture to civilization, of intellectual for emotional associations, does not affect seriously the mass of subconscious activities and modes of thought learned more by imitation than by education.

—— The history of anthropology. (Science, N. Y., 1904, N. S., XX, 513–524.) Address at St Louis, Sept., 1904. Discusses "the general conditions of scientific thought that have given rise to anthropology,"—the anthropological science of to-day is distinct in scope and method from the speculative anthropology of the 18th and of the early part of the 19th century. About the middle of the last century the beginnings of anthropology were laid from three distinct points of view — historical, classificatory, geographical (Darwin, Spencer, Tylor, Bastian, Gerland, — *Elementargedanken*, "Culturbrille," etc.). The linguistic aspect was discussed by Steinthal, the somatic was set going by the metric method of Quetelet. Folk-psychology felt the influence of Steinthal and subsequently of Wundt, Baldwin, Tarde, Stoll. Somatology owes much to Huxley, Wiedersheim, Galton, and Pearson, — the last two have developed the methods of the quantitative study of the varieties of man. The research work of the field anthropologist is of some importance, and detailed archeological and ethnological studies have reacted upon the theories of anthropology. Anthropology is now becoming of great value in the general system of our culture and education, particularly in enabling us to see our origins and criticize objectively our own work.

Brower (C. DeW.) Collection and preservation of antiquities for the benefit of the public. (Rec. of Past, Wash., 1905, IV, 57–60.) Cites examples of valuable relics hidden away in attics, bureaus, etc., and inaccessible to students. Argues for the better preservation and exhibition of these, preferably in museums.

Buschan (G.) Cultur und Gehirn. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., 1904, XXXV, 127–133.) See *American Anthropologist*, 1905, N. S., VII, 135. This paper, in extended form, has appeared as *Cultur und Gehirn* (Wiesbaden, 1905) in the series of monographs entitled *Grenzfragen des Nerven- und Seelenlebens*.

Cartailhac (É.) Les anneaux-disques préhistoriques. (L'Anthropologie, Paris, 1904, XV, 359–368, 5 figs.) Résumé and critique of an article by Ch. Buttin on *Les anneaux-disques préhistoriques et les tchakras de l'Inde* in the *Revue Savoisienne* for 1903. B. compares the prehistoric disc-rings found at Combes, near Chambéry, in 1883, with the steel disc-rings now used as weapons only by the Akalis, a Sikh tribe of the Punjab. Cartailhac thinks the comparison suggestive, but asks more evidence.

Chamberlain (A. F.) Proverbs in the making: Some scientific common-places. II. (J. Amer. Folk-Lore, Boston, 1904, XVII, 268–278.) Nos. 206–450 of trite statements of scientific facts and fancies by writers in various modern languages.

Cosentini (F.) Les recherches anthropologiques modernes et la sociologie génétique. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ S., V, 591–600.) Discusses origin of human race (author thinks "polygeny is not only a logical consequence of the Darwinian theory, but is also confirmed by the results of prehistoric investigations"), migrations (rare in primitive times), paleolithic (fire created the hearth and gave birth to sociability; no religion) and neolithic (industry and social life developed; division of labor; nomad becomes sedentary) man, age of metals (augmentation of human strength and improvement of all forms of work, analogy between pre-

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historic men and the savages of to-day, and the atavic regression of criminals in physical and psychical characters toward the condition of the lower races of man.

Dieterich (A.) Mutter Erde. (A. f. Religsw., Lpzg., 1904, VIII, 1–50.) First two sections of extended discussion of "mother earth" in folk-thought, custom, mythology, religion, etc., especially the folk-religions of ancient Greece and Rome. Earth is mother of men, from her they come forth as children, to her they return at death to be reborn. Begetting and birth belong with sowing and plant-growth. "Mother earth" is the first root of all religions. The Athenian was proud of his autochthony. Hellas abounded with traces of the earth-cult. Through Plato the world caught up something of Attic folk-belief.

Fischer (W.) Ein einfaches und praktisches Verfahren für Hand- und Fussabdrücke auf Papier. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 49–50.) Brief account of a method of obtaining impressions of the hands and feet on paper by means of a water-color solution.

Frassetto (F.) Appunti sulla scafocefalia patologica. (A. d. Soc. Rom. di Antrop., 1905, XI, 195–210.) Gives results of observation of four scaphoid crania in the Anthropological Museum of the University of Padua, with brief descriptions of such skulls in other collections or recorded by other authorities. A valuable bibliography, 1781–1901, of 54 titles, including references to living scaphocephali, is appended. The facts met with in the examination of scaphoid crania are best explained, according to F., by the theory of obelic hypervascularization, manifesting itself in the early fetal periods. Hereditary syphilis may be one of the ultimate causes of the hypervascularization due to neoplasia of the capillaries following irritation.

—— Appunti sulla trigonocefalia. (Ibid., 211–215.) Lists all known cases (27) of trigonocephaly. This anomaly is not due, F. thinks, to precocious synostosis of the bifrontal or metopic suture, but rather to hypervascularization of the metopic region, causing such synostosis, and due sometimes to syphilis. This hypervascularization arises in the embryonic period. Bibliography of 11 titles.

—— In morte di Leopoldo Maggi. (Ibid., 322–328.) Brief account of life and scientific activities of the Italian anatomist-anthropologist with bibliography (74 titles) of writings, 1872–1899.

Guibert (A.) Évolution mentale, son apogée, ses lois. (Bull. Soc. d' Anthr. de Paris, 1904, V^e^ s., V, 615–630.) Dr G. argues that when it has reached adolescence and maturity the human understanding is autonomous and does not disappear with the vanishing of the majority of the sensorial perceptions. At its apogee it directs, controls, and utilizes these. The laws of mental evolution are: Heredity of understanding, evolution by progressive differentiation of ideas among themselves, evolution by adaptation to the milieu, hierarchization of the ideas of the understanding (slow process).

Günther (S.) Die Anfänge des Zählens, Rechnens und Messens im Lichte der vergleichenden Ethnologie. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 133–134.) Touches on discontinuities in numeration (Danish *halvtredsindstyve*, 50; French *quatre-vingts*, 80), fingercounting, the Hindu invention of zero, prehistoric sense for geometry seen in ornamentation, use of same stereometric form of buildings by widely separated peoples, Micronesian charts, etc. In the discussion Dr Oppert discussed at some length the invention of zero.

—— Entwickelung, Richtpunkte und neuere Methoden der Völkerkunde. (Ibid., 42–43.) This address has appeared in extended form as *Ziele, Richtpunkte und Methoden der modernen Völkerkunde* (Stuttgart, 1904, pp. 52).

Hales (F. N.) Materials for the psychogenetic theory of comparison. (Brit. J. Psych., Cambridge, 1905, I, 205–239.) Treats of comparison in the gesture-language of deaf-mutes and primitive peoples, in spoken languages (American, Australian, Polynesian, African, Melanesian, Dravidian, Indo-Germanic). In comparisons the development of linguistic forms in the race parallels that in the individual. The most primitive methods are opposition and exclusion, — graduation comes later.

Hogg (A. J.) The patination of flint implements. (Man, Lond., 1905, 6–7.)

Author concludes that, in certain implements from Knowle (Wiltshire) the glaze is due to the operation of sand in running water. In Egypt stones are polished by wind-driven sand.

Jacob (S.), **Lee** (A.), *and* **Pearson** (K.) Preliminary note on interracial characters and their correlation in man. (Biometrika, Cambridge, 1903, II, 347–356.) Treats of correlation of breadths on living head, cephalic and nasal indices, orbital, cephalic and nasal indices of cranium, length and breadth of living head. The material is Naqada, Bengalese, Bavarian, Aino, etc. Authors hold that the anatomists' "principle of compensation" is quite fallacious.

Kittredge (G. L.) Disenchantment by decapitation. (J. Amer. Folk-Lore, Boston, 1905, XVIII, 1–15.) Well-documented comparative study of a motif occurring in two Middle English romances, *The Carl of Carlisle* and *The Turk and Gawain*. Whatever their dates these romances preserve, in the matter of disenchantment, a naïve and ancient superstition, which may fairly claim universal currency. Gaelic, Welsh, Irish, Scotch, German, Austrian, Gipsy, Swedish, Norwegian, Breton, Armenian, and other cognates are discussed.

Kollmann (J.) Neue Gedanken über das alte Problem von der Abstammung des Menschen. (Globus, Brnschwg., 1905, LXXXVII, 140–148, 3 fgs.) Discusses the Pithecanthropus of Dubois, man of Neandertal and Krapina, — theories of Schwalbe, Klaatsch, Giuffrida-Ruggeri, etc., — pygmies and their place among the varieties of the human race, the anthropoids (gorilla fetus), etc. Prof. K. considers that the Neandertal man was an ancestor of modern European man; the pygmies were the first form of the human race, since transformed, their high, well-developed skulls are archetypal for man. K. is a monogenist, and for him the man of Neandertal is only an offshoot of the large races. The same article (with 7 fgs.) appears also in the *Cbl. d. Deutschen Ges. f. Anthr.* (München), 1905, XXXVI, 10–20.

Lang (A.) Misgivings of an anthropologist. (Man, Lond., 1905, 7–10.) Enumerates 10 "fallacies" in opinions concerning the origin and nature of totemism, particularly with reference to the Australian aborigines.

Layard (Nina F.) Further excavations on a paleolithic site in Ipswich. (J. Anthr. Inst., Lond., 1904, XXXIV, 306–310, 2 pl.) Describes excavations made in October, 1903, in a pit in the brick-earth of Ipswich and the paleolithic implements diverse in form discovered there. They are probably due to "a post-glacial colony of paleolithic men."

Newell (W. W.) The Passover song of the Kid and an equivalent from New England. (J. Amer. Folk-Lore, Boston, 1905, XVIII, 33–48.) Comparative study with text of "Kid do go" *ca.* 1800 from Salem, Mass. N. concludes that "indications point to a single old French root for the European song" (*ca.* 12–13th century). The Jewish Passover song (song of the Kid) is only a translation of the *randonnée*, which has found its way to parts of Africa, Asia, etc.

Nicola (B.) Sopra le inserzioni dei musculi lumbricales nella mano dell' uomo. (A. d. Soc. Rom. di Anthrop., 1905, XI, 217–227.) Gives results of observation of the lumbrical muscles of 153 hands in 100 human bodies (adult, mostly Piedmontese) with references to the literature of the subject. Some of the less common observations are recorded in detail. Abnormal lumbricals occurred in 50 percent of the cases and were more frequent in men than in women. The third lumbrical is most anomalous. Bibliography of 13 titles.

Pearson (K.) Professor Aurel von Török's attack on the arithmetical mean. (Biometrika, Cambridge, 1903, II, 339–345.) Critique of von Török's paper in the *Ztschr. f. Morph. u. Anthr.*, IV, 500–588, and consideration of his craniometric data of 2,000 Hungarian skulls.

—— Homogeneity and heterogeneity in collections of crania. (Ibid., 345–347.) Criticizes C. S. Myers' discussion of the Naqada and other crania in *Man*, 1903, 13.

Ranke (J.) Jahresbericht des Generalsecretärs. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 71–75.) Contains brief notes on recent anthropological literature: Prehistory (Gorgianović-Kramberger, Nüesch, Salin), Ethnology (von Luschan, Abraham und Hornbostel), Somatology and racial anthropology (Fritsch, Nieuwenhuis, Birkner, Sakaki, Walkhoff, Retzius, etc.).

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—— Zur Anthropologie des Schulterblattes. (Ibid., 139–144, 1 fg.) Discusses the general structure of the shoulder-blade, its form, etc., among the anthropoids. In man alone the fore-limbs have been freed from the duty of serving as organs of movement and support, — this, a last cause of the upright walk is the mechanical ground for the specially human structure of the shoulder-blade.

Ranke (K. E.) Das Gauss'sche Fehlergesetz und seine Verallgemeinerungen durch Fechner und Pearson in ihrer Tragweite für die Anthropologie. (Ibid., 99–104.) Discusses the bearing of Gauss's law of error, and its generalizations by Fechner and Pearson, for anthropology. Fixed organic variation-series of simple measurements must always follow Fechner's law of distribution (close to Gauss's). Otherwise the material is not homogeneous or the variation has been seriously interfered with.

Schmidt (E.) Die Grösse der Zwerge und der sogennanten Zwergvölker. (Globus, Brnschwg., 1905, LXXXVII, 121–125.) Discusses the stature of dwarfs and dwarf-like races (African pygmies, Bushmen, Minkopi, Philippine Negritos, etc.). The Malaccan Semang and Sakai, the Celebesan Toala, the Veddas of Ceylon are hardly pygmies. Reference to the average stature, etc., of the people to which civilized explorers belong, has vitiated their ideas of pygmism sometimes. Pygmies are also to be distinguished from small-statured people.

Spitzka (A.) The development of man's brain. American mind destined to dominate human powers of the earth. Illustrated by studies of the brains of intellectual persons, of individuals of various races and of criminals. (Connecticut Magazine, 1905, 319–355, 6 pl.) Discusses cerebral localization, brains of intellectual persons, cerebro-cerebellar ratio, callosum, race brains, criminal brains. The brains of sane and intellectually eminent persons give evidences of morphologic superiority in surface configuration, complexity and area of certain cortical territories, etc. Sane criminals have no "criminal cerebral characteristics." The formation of an "*American Family* of the Aryan Race" now going on will lead to bigger and better brains.

von den Steinen (K.) Die Bedeutung der Textilmuster für den geometrischen Stil der Naturvölker. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 126–127.) Points out how the forms of nature and those of technique stimulate the artist formation-power and thus "suggested motives" have a large rôle in primitive decorative art. Zigzags, triangles and lozenges with central cross as a model, due to the *diagonal* disposition, are the starting point for numerous examples of "symbolism" among the American Indians. For the North American Indian the triangle is a tent, for the Polynesian a shark's tooth, for the Xingu Indian the woman's cover. Explanations are secondary interpretations.

Toldt (C.) Ueber einige Structur- und Formverhältnisse des Menschlichen Unterkiefers. (Ibid., 94–99.) Discusses and criticises Walkhoff's *Der Unterkiefer der Anthropomorphen und des Menschen* (Wiesbaden, 1902) and Weidenreich's *Die Bildung des Kinnes* in the *Anatomischer Anzeiger* for 1904, and gives results of radiographic investigations. The conclusion reached is that the human chin is a correlate of the whole structure of the head — a peculiar feature of man as compared with all other animals, and not a regressional or degenerative phenomenon, as would be the case if it had to be referred to a reduction of the teeth.

Uhlenhuth (*Hr*) Ein neuer biologischer Beweis für die Blutsverwandtschaft zwischen Menschen und Affengeschlecht. (Ibid., 114–118.) Discusses the use of serum-reactions as a means of determining affinity and résumés the chief facts (which he has confirmed) of Nuttall's *Blood Immunity and Blood Relationship* (Cambridge, 1904). With the orang-utang, gorilla, and chimpanzee the reaction was almost as strong as with man; with the *Cynocephali* and *Cercopitheci* the result was weaker; with the New-World monkeys still weaker; no complete reaction was obtained from the *Cebidæ* or from *Hapalidæ*, nor from lemurs. The degree of the blood relationships of man and the apes is thus indicated.

Volkov (Th.) Les variations squelettiques du pied. (Bull. Soc. d' Anthr. de Paris, 1904, Ve s., V, 720–725.) Bibliography, 89 titles, to monograph.

Walkhoff (O.) Das Femur des Menschen und der Anthropomorphen in seiner

functionellen Gestalt. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 87–88.) Gives results of experiments concerning the functional form of the femur in man and the anthropoids, made with X-rays, etc. Details are given in the author's *Das Femur des Menschen und der Anthropomorphen in seiner funktionellen Gestalt* (Wiesbaden, 1904.)

Witkowski (*Dr*) Die Bäder und Badeleben in früherer Zeit. (Ibid., 1905, XXXVI, 23.) Résumé of address before Wiesbaden Anthropological Society. The use of baths for purposes of cleanliness is comparatively new. Water was "feared" by many primitive men. Hydro-mythology is quite extensive. In India baths first make their appearance among the civilized races. Then in Babylon and Assyria. With the Jews springs were the center of social life. In Japan baths had a high development, —not so in China. The ancient Greeks had sea and river baths (later also house-baths). Rome had gorgeous baths, curative and otherwise, which the barbarians and Christians adopted. Sun-baths were introduced from Greece into Rome.

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Anoutchine (A.) L'archéologie en Russie. (L'Anthropologie, Paris, 1904, XV, 351–358.) Résumé by M. Déchelette from the German translation in the *Centralblatt für Anthropologie* for 1903. See *American Anthropologist*, 1903, N. S., V, 560.

Ardu-Onnis (E.) Restes humains préhistoriques de la grotte de San Bartolomeo, près Cagliari. Contribution à l'anthropologie de la Sardaigne. (L'Anthropologie, Paris, 1904, XV, 313–331, 11 figs.) Discusses the prehistoric human remains (2 skulls and a number of bones of the face and cranium; with measurements, etc.) discovered in 1880 by F. Orsoni. The cave of San Bartolomeo contains three successive deposits indicating the presence of man of the stone, bronze, and iron ages. The cranial remains resemble strikingly modern Mediterranean forms (Sardinian).

Baudoin (M.) Débris d'une mâchoire d'enfant trouvé sons un mégalithe de Vendée. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ S., V, 570.) Note on the fragment of the jaw of a child (5–6 yrs.) found in 1904 under the megalith of the Champ de Savatole, Bernard, Vendée.

—— Luxation préhistorique de l'atlas sur l'axis. (Ibid., 553–554.) Describes luxation indicated in a skeleton from a megalith in Vendée, the first on record. The luxation was caused by a falling block of stone, death being instantaneous.

—— *et* **Bonnemère** (L.) Les haches polies dans l'histoire jusqu'au XIX^e^ siècle. (Ibid., 496–548, 3 figs.) Interesting, well-documented article treating of the history of polished stone hatchets: Synonymy ("thunder-stones," etc.), folk-lore (amulets, folk-medicine, legends), Greek and Latin periods, Renaissance (the text of Aldovandus *De Ceraunia* is given in detail, also Gerner and Mercatus), other writers briefly, from Shakespeare down to close of 18th century. The connection of polished stone hatchets with thunder, in folk-lore, is very widespread.

de Blasio (A.) Steatopigia in prostitute. (A. di psich., neuropatol., etc., Torino, 1905, XXVI, 257–264, 1 pl., 1 fg.) Describes two cases (Apulian aged 22, Neapolitan, 19) of steatopygy (excessive development noticed in early life, marked at puberty) in free-will prostitutes. Author suggests that prehistoric man may have been steatopygous.

Bolk (L.) Répartition du type blond et du type brun dans les Pays-Bas. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ S., V, 578–586, 3 fgs., map.) Based on personal examinations of 5,000 Dutch school children and data from 3,400 *questionnaires* representing some 477,200 school children, Jews not counted. Dr B. concludes that the population of Holland is no less mixed than that of Belgium or England. The principal elements (*Homo Europæus* and *Homo Alpinus*) occur in the proportion of 1 : 2, the Alpine variety occupying the south especially. The primitive Zeeland type (Alpine) has crossed with the Frisian (European) to produce a pseudo-alpine variety with brown eyes, long face, and broad skull. The brunets are most numerous in Zeeland, Limburg, North Brabant; blonds in Friesland, Drenthe, and the northern part of N. Holland. Brunetism increases toward Belgium.

Bonnet (—) Demonstration des Greifswalder Scaphocephalen. (Corr.-Bl. d.

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Deutschen Ges. f. Anthrop., München, 1904, XXXV, 89–91.) Describes the scaphocephalic skull of a weaver of Stettin (it was the subject of a dissertation by Schade in 1858), who died in 1855 at the age of 38. The cause of the premature synostosis of the sagittal suture was probably some affection of the periost or the bones, occurring in fetal life.

Boxich (G. I.) Contributo allo studio morfologico-clinico e antropolico dei deliquenti. (A. d. Soc. Rom. di Anthrop., 1905, XI, 229–299.) This detailed monograph, of which pages 236–267 give anthropometric data in tabular form (stature, weight, head, limbs, hand, etc.) and pages 268–288 list of degenerative and other related characters, with list of frequency, is based on Dr B's personal measurements and observation of 100 male criminals from various parts of Italy (29 from Sicily). Of degenerative characters, etc., 89 are cited, occurring in all 391 times, — the most frequent are low forehead 17; "handle ears" 14; tattooing 16; severe childhood diseases 21. Two types of constitutions occur, — one with ample chest and large heart, the other with narrow chest and small heart. Of these the first corresponds to the violent class of criminals, the second to the ordinary delinquent committing petty crimes, theft, etc. Deficiency in proportion of fingerreach and certain other somatic peculiarities also characterize the first type. Interference with the typical evolution of the organism, disturbance of its normal equilibrium, modifications of the sense of self, these morbose phenomena, lowering the physiological and mental functioning of the human being, are the matrices of crime.

Bünker (J. R.) Windische Fluren und Bauernhäuser aus dem Gailtale in Kärnten. (Mitt. d. Anthr. Ges. in Wien, 1905, XXXV, 1–37, 39 fgs.) Describes the five "fields" belonging to Riegersdorf, east of Arnoldstein, as typically Wendish (Krainberg in particular). These villages seem to have had different origins. Also the characteristic Wendish house of the Gail valley (in Pökau, Feistritz, Arnoldstein, Nötsch, Agoritschach). The Wendish house was originally a wooden house. Externally it resembles very much the German house, but the internal arrangement is quite different. The primitive type consisted of "stable" and vestibule.

Burne (Charlotte S.) Northumbrian social customs. (Folk-Lore, Lond., 1904, XV, 341–343.) Notes from parish of Ilderton connected with the Roddam family, — agricultural laborers, wedding-custom, rhymed charter of Athelstan.

Buschan (G.) Bornholm. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 149–152.) Discusses name ("island fortification"), archeological history (settled from the peninsula of Schonen in the later stone age) through stone, bronze, iron ages and early Christian period (of 37 rune-stones discovered some 5 or 6 belong to heathen times), present population, physical characters, language ("low Danish" mixed with "Swedish"), religion, geology, etc. Up to 1886, Vedel, whose *Bornholm's Oldtidminder* (Kopenhagen, 1886), with a supplement (1897) tells the story of the island 400 B.C.–1050 A.D., recorded 36,000 graves of the prehistoric period.

Capelli (L. M.) Per la distribuzione regionale della genialità in Italia. (A. di psich., Torino, 1904, XXV, 252–268.) Treats of the local distribution of men of genius (enumerated from De Gubernatis' biographical dictionary in the various Italian provinces. C. finds that they bear a certain relation (Lombrosan) to the figures for the prevalence of high stature, large skull capacity, mental diseases, epilepsy, alcoholism, suicide, illegitimate birth, idiocy, density of population, illiteracy, wealth, etc.

Cook (A. B.) The European sky-god. (Folk-Lore, Lond., 1904, XV, 264–315, 370–426.) First two sections of a monograph discussing the nature of the sky-god among the ancient Greeks, Italians, Celts, Germans, Slavs, etc., — deals with the nature, functions, folk-conception, name, affinities, etc., of Zeus (the brilliant; also the thunderer, rain-bringer, etc.), sky-god, sun-god, rain-god, water-god, earth-god, – Zeus had his sacred tree, the king was a human Zeus, named after him, acting as his vice-regent, etc. The divine king was doomed to die as his physical strength waned. A stronger man succeeded, or he abdicated after a fixed term. The victors at great festivals and games posed as Zeus. Apollo was a mere solar aspect of Zeus and more anciently connected with the oak, not

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the laurel, — there were other surrogates besides the latter. C's general view is that his conclusion in regard to Zeus and Jupiter hold good perhaps for the whole Indo-European stock. Some of his analogies und etymologies are quite venturesome.

D'Aeth (F. G.) Saint James's day and grottoes. (Ibid., 1905, XVI, 180–182.) Brief account of children's festival at Leytonstone, Essex, on St James's day, when "grottoes" are constructed of clinkers and rubbish on the edge of the pavement, — oyster-shells are used, if possible. A lighted candle is put in the grotto (purchased with the first halfpenny given by passers-by). This custom is "fairly general in the London district." The grottoes are probably imitations of shrines of St James of Compostella, so the custom is *ca.* 500 years old.

Deecke (W.) Farbendifferenzen prähistorischen Steinwerkzeuge. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 86–87.) Discusses briefly the color of flint tools. Those of Rügen are black, a color rare at Stralsund. (Experiment shows that fire has no rôle in making or in coloring flints.) The patina may be a test of "eoliths." The spurious flint can also be detected.

Deniker (J.) Les six races composant la population actuelle de l'Europe. (J. Anthr. Inst., Lond., 1904, XXXIV, 181–206, 6 pl.) Dr D. argues for the existence in modern Europe of six races: 1. Nordic, tall dolichocephalic, blond. 2. Eastern, sub-brachycephalic, small-statured, blond. 3. Ibero-Insular, dolichocephalic, small-statured, brunet. 4. Western, brachycephalic, small-statured, brunet. 5. Atlanto-Mediterranean subdolichocephalic, tall, brunet. 6. Adriatic, brachycephalic, tall, brunet. To these are added, as secondary races, for No. 1 a sub-Nordic, for No. 2 a Vistulian, for No. 5 a Northwest, and for No. 6 a sub-Adriatic. The localization of these races is indicated. D. considers that his scheme and Ripley's do not differ so much as might be supposed.

Dennis (L. J.) Fin Mac Coul's pebble. (Folk-Lore, Lond., 1905, XVI, 186, 1 pl.) Note on a "pebble," which this famous giant once threw at his wife. Fin is now Carlingford mountain, County Down.

Dittmeyer (—) Bericht über aufgefundenen Trichtergruben. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., 1904, XXXV, 42.) Brief account of the examination in September, 1903, of the funnel-pits near Oberwaldbehrungen, said to be the sites of dwellings, a view confirmed by the discovery of bones, ashes, clay, sooty stones, etc.

Elbert (J.) Ueber die Altersbestimmung menschlicher Reste aus der Ebene des westfälischen Beckens. (Ibid., 106–114.) Discusses the age of finds of human remains, etc., in the plain of the Westphalian basin (Lippe, Ems and tributaries), — geological and archeological evidences are considered (the measurements of a dolichocephalic skull are given on p. 113). The skeletons are of neolithic type, but they have been to ascribed the old diluvial stratum. The evidence is not sufficient to settle the question of geological age.

Eyre (Margaret) Folk-lore of the Wye valley. (Folk-Lore, Lond., 1905, XVI, 162–179, 1 pl.) Treats of the stones of Trelleck ("Harold's stones"), the "virtuous wells," charms and folk-medicine, witches and their ways, white magic, witchwives, fairies, etc. Offa's dyke still divides England from Wales. In this region are the Forest of Dean people, the Welsh, and on the hill-tops "the ancient Silurians [?]."

da Costa Ferreira (A.) La capacité du crâne et la composition ethnique probable du peuple portugais. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 473–491.) Résumés investigations of Ferraz de Macedo, Fonseca Cardoso, Severino Marques, etc. According to the author there exist in Portugal two dolichocephalic (small stature, small head; tall, large head) and three mesaticephalic (small, large head; taller, small head; taller than first, shorter than second, small head) types of man. The short, small-headed dolichocephal of Traz-os-Montes is related to the race of Cro-Magnon; the mesaticephaly of Minho is due to the Celts; in Alemtejo a Semitic (?) and in Algarve a Berber-Moor element has persisted. Da C. F. looks on skull capacity as a good ethnic criterion.

Fuchs (K.) Ueber ein prehistorisches Almenhaus. (Globus, Brnschwg., 1905, LXXXVII, 85–90, 151–156, 8 fgs.) Prof. F. argues that "the wooden prototype

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of the Greek temple was an *Almenhaus*, the house of a rich cattle-breeder of the middle European plateau, whom a long winter compelled to lay by great stores of hay, and so erected over the stable a large hay-loft which kept it warm." He describes in detail a house, at the same time the primitive form of the modern Czik wood-houses, the ancient Greek temple and several modern Alpine types of dwellings.

Fuhse (F.) Hügelgräber in der Nahe von Gandersheim, Braunschweig. (Ibid., 125–128, 6 fgs.) Brief account of a group of mound-graves (first investigated by Thiele in 1865–1874, then by Dr F. in 1904) and contents. New for this region are the packing of incinerated bones and votive gifts in a covering of wood; also the presence as grave-gifts of wheel-needles (4-eyed Middle German type).

Griffiths (G. B.) Measurements of 130 criminals. (Biometrika, Cambr., 1904, III, 60–62.) Give tables of details of cranial and head measurements of 100 "ordinary" and 30 lunatic criminals, made at Parkhurst Prison. The cephalic index of the former ranges from 71.2 to 90.2; of the latter from 73.1 to 87.1.

Guldberg (G. A.) Ueber die Krümmung des Oberschenkels. (Int. Mntsschr. f. Anat. u. Phys., Berlin, 1904, XXI, 292–298.) Gives results of examination of 90 femora (right and left) from old Norwegian graves. The infantile and fetal type is rectilinear. The physiological curvation develops when the child begins to walk and is well-marked in the second and third year; and in the period from 8–12 years the curve reaches practically the adult state.

Gunther (R. T.) The cimaruta, its structure and development. (Folk-Lore, Lond., 1905, XVI, 132–161, 8 pls., 1 fg.) Treats in detail of the *cimaruta*, or sprig of rue, "a compound charm of some complexity," dedicated to the service of infants. In a good *cimaruta* are these emblems: Rue, hand, moon, key, flower, horn (or fish), cock (or eagle) and, sometimes, in later and more elaborate specimens also serpent, cornucopia, cherub. The modern *cimaruta* is of silver. G. thinks that the *cimaruta* is not a descendant of any of the Roman phallic amulets, but had an essentially separate origin (materially in a real sprig of rue). The change from an actual *materia medica* to a symbolic representation of it is easy enough. Association with trees accounts for some of the added elements. From an earlier broader significance it shrank to be the special protection of women in childbirth. Although not mentioned by writers before 1888 the *cimaruta* is not a mere spurious *roba Americana*, but an ancient amulet, closely resembling old Etruscan and Assyrian objects of similar nature.

Hedinger (*Dr*) Die Ligurer. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 53–54.) Author argues that the primitive Ligurians were a dolichocephalic people closely resembling the Cro-Magnon race and related to the Berbers, Kabyles, and Guanches. They were pushed southward and westward by the descent of the Aryans from the north.

—— Aegäische Cultur. (Ibid., 57–59.) Résumés briefly recent discoveries. The Kamaras culture is to be ascribed to the Carians (neither Aryan nor Semitic), whose civilization produced in Crete was taken over by the Greeks.

Hodgson (M. L.) Some notes on the Huculs. (Folk-Lore, Lond., 1905, XVI, 48–55, 6 pl.) Notes on habitat, religion, marriage-customs, easter-eggs, ornaments, implements, etc., of the Hutzuls of Galicia, compiled from the data in Prof Szuchiewicz's *Huculszczyzna*. The Hutzuls have preserved their ancient customs, original dress, etc., to a large extent. Their religion has many elements of paganism.

von Jaden (H.) Ueber den islandischen Bauernhof. (Stzgb. d. Anthr. Ges. in Wien, 1904, 102–103, 4 fgs.) Brief account of the typical farm buildings of the Iceland peasants, who are more cattle-keepers (rather shepherds) than farmers, as they cannot cultivate grain.

Jaeger (J.) Die Chiemseelandschaft. (Globus, Brnschwg., 1905, LXXXVII, 181–186.) Geological and archeological-historical account of the region about Chiem, the largest of the lakes of the Bavarian Alps. Evidence of man's presence here in the oldest stone period is not yet forthcoming, nor does clear proof of lake-dwellings exist. The later stone age is sparsely represented. Stations of the bronze and Hallstatt period, —

the iron-using people were perhaps Germanic, — occur, remains of the Roman domination, etc.

Jennings (Hermione L. F.) A Cambridgeshire witch. (Folk-Lore, Lond., 1905, XVI, 187–190.) Describes Mrs S. (1810-1880) and relates stories concerning her.

Jones (B. J.) Stories from Leitrim and Cavan. (Ibid., 1904, XV, 336-341.) English texts of 6 brief stories (dead letter, dog spirit, dead priest, man who sold his daughter to the devil, fairy's question, crock of gold) told in 1894 by a domestic servant.

Karo (G.) Neue Funde von Knosos. (A. f. Religsw., Lpzg., 1904, VIII, 144-148.) Résumés the discoveries of religious importance in the recent expeditions of Evans 1902-03.

—— Ausgrabungen im östlichen Kreta. (Ibid., 148–149.) Treats briefly of the terra cotta statuettes and animal figures found at Palaikastro.

Kauffmann (Fr.) Altgermanische Religion. (A. f. Religsw., Lpzg., 1904, VIII, 114–128.) Critical résumés of recent literature on ancient Teutonic religion, — works of Meyer, Frommhold, Goldmann, Müller, Schoning, Staerk, Hensler, Ebermann, etc.

Kemke (H.) Die Bedeutung der Ostsee für die Vorgeschichte unserer Provinz. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 44–46.) Points out the significance of the Baltic for the prehistory of the province of East Prussia. Commerce with the north and west was considerable in pre-Roman times, and before the Christian era relations with the west had been established.

Kretische Forschungen. (Globus, Brnschwg., 1905, LXXXVII, 190.) Résumés articles of Harriet A. Boyd in *Transactions* of the Department of Archeology, University of Pennsylvania, and A. J. Evans in *Nature* for January 26, 1905.

Leroy (R.) Deux cas de thorax en entonnoir dans la même famille. — Autopsie. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 571–578.) Describes two cases (father and son) of the pathological (rare) malformation known as funnel chest, *Trichterbrust*, with references to the literature of the subject. The autopsy of the son is given. The cause of this anomaly is still in dispute.

Lett (H. W.) Winning the churn, Ulster. (Folk-Lore, Lond., 1905, XVI, 185–186.) Brief account of a custom, "prevalent all through the counties of Down and Antrim 50 years ago." The *churn* is a sort of lost sheaf or corn-maiden.

Lindner (A.) Die Hügelgräber im Kotlover Walde bei Lippen, Bezirk Budweis. (Mitt. d. Anthr. Ges. in Wien, 1905, XXXV, 38–44, 2 pl., 4 fgs.) Enumerates and describes contents (clay urns and other pottery, etc.) of 5 hill-graves, of which the first four belong to to the close of the Hallstatt period. The excavation took place 1902–1904.

Maclagan (R. C.) Additions to "The Games of Argyleshire." (Folk-Lore, Lond., 1905, XVI, 77–97, 192–221.) First two sections of data supplementary to author's *The Games of Argyleshire* (London, 1900), — rubrics: general activity, articulation, auguries, ball games, balancing, bat games, blind-fold games, archery, choosing partners, chucks, circling, cock-fighting, concealed object recovering, counting out rhyme, dancing, finger-names, funeral games, gambling, nine-holes, hand-clapping, hen and chickens.

Macquart (É.) Les mouvements de la population et de la richesse privée de France au cours du dernier quart de siècle. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 587–588.) M. concludes that, "in spite of the most ingenious and seductive theories, there really exists no relation between the demography of a nation and the economic condition of its inhabitants."

Mehlis (C.) Eine neue neolithische Station in der Vorderpfalz. (Globus, Brnschwg, 1905, LXXXVII, 337–338, 4 fgs.) Describes the excavation of a house-pit at Venningen in February, 1905. The upper layer yielded pottery fragments of the Roman period, the lower a pottery fragment of the neolithic age, a piece of elk-horn, etc. The neolithic pottery fragment has three finger-nail impressions, which Köhl considers a mark of the lake-dwelling type.

—— Wilser's "Germanen." (Ibid., 254–255.) Résumés Dr Ludwig Wilser's *Die Germanen* (Leipzig, 1904). Wilser finds the home of Homo Primi-

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genius in Central Europe,—the North European race gave birth to the Aryan tribes.

Montelius (O.) Die frühesten Zeiten Roms. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 122.) Brief account of the oldest archeological remains found on the site of Rome. The graves discovered in the Forum last year must all be older than 750 B. C. The earlier iron age (the last centuries of the second and the first centuries of the first millennium B. C.) are numerously represented,—here belong some Esquiline and Forum remains of the close of the bronze age abound. Some objects from the copper age, more than 2000 B. C., also occur. The site of the city must have been inhabited at a very early period.

Much (R.) Das Zeitverhältniss sprachgeschichtlicher und urgeschichtlicher Erscheinungen. (Ibid., 135–138.) Discusses consontal sound-shifting (known to primitive Teutonic) and the regression of the accent, a somewhat later phenomenon, which probably was known in the iron age (La Tène period). Examples and illustrative words are given. The nature of the accent and the presence of sound-shifting enable us to determine the age of certain words, and consequently, the antiquity of the use of iron, etc.

Myres (J. L.) The evil eye and the camera. (Man, Lond., 1905, 12, 1 fg.) Reproduces, with comments, photograph of group of Italian boys at Segri, one of whom makes the two-finger charm against the "evil eye" of the camera.

Niceforo (A.) Contribution à l'étude de l'indice céphalique en Suisse. (Bull. Soc. d'Anthr. de Paris, 1904, V s., V, 493–495.) Gives results of measurements of 587 school-children (aged 10–14 years) of Lausanne, Switzerland, all born in Vaud and nearly all of Vaudois parents. The cephalic index ranges 74 to 93, — the most frequent (12.94 percent) is 80, followed closely by 82 In Vaud the population is predominantly sub-brachycephalic.

Nordische Namensitten zur Zeit der Völkerwanderung. (Globus, Brnschwg., 1905, LXXXVII, 96–97.) Notes that Axel Olrik, in his *Danmarks Heltedigtning* (1903), has shown that *ca.* 500 A. D., the rule was for the name of the son to alliterate with that of the father, a good test of the age of sagas.

Osthoff (H.) Etymologische Beiträge zur Mythologie und Religionsgeschichte. II. (A. f. Religsw., Lpzg., 1904, VIII, 51–68.) Discusses etymologies of Greek *πέλωρ*, "monster," and *πέρας*, "strange, ominous phenomenon." O. considers that the words are, with Indo-German sound-changes, the same. Cognates are found in O. N. *skars*, "monster, witch, etc.," Lith. *keras*, "magic," etc. All from the root *k-r*, "make, do."

Padstow (The) hobby horse, etc. (Folk-Lore, Lond., 1905, XVI, 56–60, 2 pl.) Brief account of the "hobby horse," a May-day custom of great antiquity in Cornwall, with texts of Padstow May songs.

Papillault (G.) Contribution à l'étude des "crânes négroïdes." (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 554–558, 1 fg.) Discusses, after Sergi's observations and measurements, the "negroid" skull from the old graves of Novilara, near Pesaro in the Picenian country. Dr P. considers that studies of cranial morphogeny are yet very hypothetical and should be carefully separated from ethnological classifications. Ethnic must be distinguished from serial characters.

Piroutet (M.) Nouvelles fouilles de tumulus aux environs de Salins, Jura. (L'Anthropologie, Paris, 1904, XV, 297–312, 16 fgs.) Describes a number of tumuli and contents (skeletons, fibulæ, bracelets, rings, fragments of pottery, etc., terra cotta objects, ear-rings, belt-plate of stamped bronze, etc.). The first tumulus contained some 13 skeletons in whole or in part.

Pittard (E.) L'indice céphalique chez 837 Tsiganes (hommes) de la péninsule des Balkans. Influence de la taille sur l'indice céphalique. (Ibid., 333–349.) Discusses, with résumés of measurements and curve, the cephalic index of 837 male gypsies of the Dobrudja. Comparisons are made of so-called Roumanian, Turkish, Tartar, Servian, Hungarian gypsies. The average index is 78.25. The Bulgarian gypsies have a larger proportion of dolicephals than Turkish or Roumanian — with the last the proportion of brachycephals is highest (15 percent), due to Roumanian inter

mixture. Dolichocephaly increases with increase of stature.

Prähistorische Ausstellung des Württembergischen anthropologischen Vereines in Stuttgart. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1905, XXXVI, 21–22.) Brief account of the exhibition of prehistoric objects, etc., held January 12–30, 1905. The periods represented were: The older stone age, later stone age, pre-Roman metal period, Roman period, Frank-Alemanian period.

Pratt (W. A.) Recent archeological studies in Rome. (Iowa J. Hist. & Pol., Iowa City, 1905, III, 455–457.) Now the spirit of archeology rules in investigations, not that of commercialism. The oldest Rome lies under a mass of debris 30 to 50 feet deep. Parts of the Forum were covered 40 feet. The earlier graves (ninth century B. C.) show Etruscan, but not Greek influence.

R. Die Wormser Steinzeitfunde. (Globus, Brnschwg., 1905, LXXXVII, 283–285, 10 fgs.) Discusses the recent finds in graves and "stations" of the stone age about Worms, now in the Paulus museum. Three types of pottery occur in places with corresponding difference in the position of the skeleton, the votive gifts, etc. The skulls found are rather highly developed, the teeth excellent. The dwellings seem to have been pits over which a light hut was erected.

Rademacher (—) Die prähistorischen Begräbnisstätten am Niederrhein. (Cor.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 50–51.) Brief account of investigations and remains found, — some 20 burial-sites are now known. The contents indicate that they were in use from the Hallstatt period down to the era of Roman domination.

Randolph (C. B.) The mandragora of the ancients in folk-lore and medicine. (Proc. Amer. Acad. Arts and Sci., Boston, 1905, XL, 487–537.) A well-documented résumé of data concerning mandragora in the Greek and Latin authors and their commentators, an account of mandragora as known to the ancients, particularly its uses in medicine, for to the Greeks and Romans its rôle in folk-lore was a subordinate one. Among the topics considered are: The digging ceremony, the "human form" of the mandragora, the "hanged thief," etc.; the beliefs that the plant induced madne and influenced sexual relations; uses of mandragora in ancient medicine (plasters and poultices, wine-drug, soporific, anesthetic, "there never had been a time since the first century of the Christian era when the use of mandragora was wholly unknown to *writers*," few passages, however, prove its actual employment), — while mandragora was the principal and almost the only anesthetic of antiquity, its use never became very general either in ancient or medieval times, on account of the danger attached thereto. A good paper.

Raseri (E.) La popolazione israelitica in Italia. (A. d. Soc. Rom. di Antrop., 1904, X, 82–93.) Treats of the number, condition, occupations, etc., of the Italian Jews. The Jews seek large centers of population and are most numerous in the western and central parts of the country. There are in Italy *ca.* 36,000 Jews, about the same as 40 years ago. Females exceed males and the number of the old is proportionately large. Analphabetics are few. Trades and industries lead in occupations. The number of children is less than might be expected.

Rhamm (K.) Die Ethnographie im Dienste der germanischen Altertumskunde. (Globus, Brnschwg., 1905, LXXXVII, 131–136.) Points out the importance of ethnography for Teutonic archeology and early history. Forms of buildings and the terms used to name them and their parts, the dialect names of instruments, implements, etc., are valuable for former tribal distinctions. R. enumerates among the chief things to be studied in this respect: The body, clothing, peasant farm economy (particularly buildings, their parts, construction, etc.), agriculture (tools, methods of planting, caring for, reaping, etc.), mythological figures. The wooden shoe is discussed with some detail and R. concludes that among the primitive Teutons and Gauls, as also among the ancient Slavs and Lithuanians, the folk-shoe was the bast-shoe.

—— Ehe und Schwiegerschaft bei den Indogermanen. (Ibid., 285–289.) Discusses Indo-German family relationship (with special reference to Magyar terms also) and gives a critique of Schrader's *Die Schwiegermutter und der Hagestolz* (Brnschwg., 1904). Interesting is the

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accommodation of earlier terms (such as Gothic *atta*, "father," Albanian *ame*, "mother," etc.), first used respectfully of the older members of a group or horde, to the members of the family proper when it arose. The mother-in-law of ancient times was the mother of the man, the real "housewife," the *bête noire* of modern days is the mother of the wife (Schrader sketches her history as well as that of the other). In primitive Indo-German times, for religious as well as secular reasons, there were no bachelors. Schrader's general contention that the bachelor was the product of the town and town life, does not, according to R., hold for the Teutonic *hagestolz*.

Röse (C.) Beruf und Militärtauglichheit. (Polit.-anthrop. R., Berlin, 1905, IV, 124–150.) In this article with numerous tables the author gives results of his extensive investigations in Saxony and Thuringia and makes suggestions for increasing the physical well-being of the people. Open-air employment yield the most qualified for military service; cities and towns (*i. e.*, places over 6,000 pop.) much fewer than the country. The physical degeneration of the urban population begins early. The order of military efficiency is country, half-urban, urban. Degeneracy is most marked in room-workers.

Rosen (F.) Ueber Kindersparbüchsen in Deutschland und Italien. (Globus, Brnschwg., 1905, LXXXVII, 277–281, 1 fg.) Describes German and Italian children's clay-banks in the shape of *mammæ*, sometimes presented to women after child-birth to put gifts and savings in for the child. They are broken when the child is a year old or when it is weaned. Similar banks, from Pompeii, etc., are 2,000 years old. Connected with these things are the cults of Bona Dea, the Roman Rumilia, the Egyptian Isis, etc., — the *mamma* was a symbol of luck with the deities of fortune.

Rouse (W. H. D.) Presidential address. (Folk-Lore, Lond., 1905, XVI, 14–26.) Discusses chiefly folk-tales of modern Greece, in order to study which one must "avoid all newspaper and all self-conscious literary works, which are written in the most astonishing jargon that was ever heard of." But real modern Greek has a wealth of resource. Folk-tales contain many echoes of mythology.

Sartori (P.) Votive und Weihegaben des katholischen Volkes in Süddeutschland. (Globus, Brnschwg., 1905, LXXXVII, 91–96, 10 fgs.) Résumés the recent work (Brnschwg., 1904, 191 pp.) with the same title by Richard Andree, a valuable contribution to the study of sacrificial and votive gifts and to the literature of heathen survivals in Christendom.

Schmidt (E.) Prähistorische Pygmäen. (Ibid., 309–312, 325–329.) Discusses details of measurements, the pygmy skeletons hitherto reported from prehistoric graves and "stations" in various portions of Europe,— Schweizersbild, Grotteaux, Fées, Châlons, Mentone, Chamblandes, Mureaux, Worms, Silesia, etc. Prof. S. points out that, since they occur in a region where cretinism is endemic, the ossification of the sutures in alleged pygmy skulls may be of pathological import and not an indication merely of age. Too little attention also has been paid to individual and racial variations in stature (e. g., the proportion of small-statured among the Baden recruits). A more serious objection against the Kollmann pygmy theory, viz., the fact that the women of any race are smaller statured than the men. Thus, the so-called "pygmies" may be only small (mostly female) individuals belonging to a race of average size.

Schmidt (H.) Die Keramik der makedonischen Tumuli. (Z. f. Ethn., Berlin, 1905, XXXVII, 91–113, 90 fgs.) Discusses the pottery remains found by Traeger in 1900–1901 in the conic and flat tumuli of the great plain of Saloniki, — very few in the former, abundant in the latter: The indigenous monochrome pottery and its ornamentation (rectilinear, spiral, ribbon-spiral), imported painted pottery (Mycenian, Hellenic, etc.), ethnologic data. An indigenous development through three stages is noted, and S. ascribes the three older groups of Macedonian pottery to peoples of Thracian stock, — they are a local variety differing considerably from the Trojan forms, yet indicate the place of origin of the latter in Europe. The Trojans may have emigrated to Asia Minor before in their original home the development of the pointed and scratched spirals assumed the proportions of a full decorative system.

Schroeder (O.) Hyperboreer. (A. f. Religsw., Lpzg., 1904, VIII, 69–84.)

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Treats of the "Hyperboreans," — foreign to the oldest Epos, and first appearing in the Epigones and Hesoid. The hyperboreans' country was "heaven," and the celestial folk were by and by degraded into an ethnographic wonder. The myth grew up in a land and at a time when "mountain" was called *βόρις*, — *i. e.* in pre-Hellenic northern Greece. It took its finer form in Bœotia, and thence fertilized the hero-tale and the literature, and inspired the cults of Delos and Delphi.

Schröder (*Prof.*) Ortsnamen und Siedelungsgeschichte mit Berücksichtigung von Südhannover und Hessen. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 47–48.) The greater part of South Hanoverian and Hessian place-names belong to the period 400 B. C. to 1200 A. D. The *-hagen* names mark the 11th and 12th centuries; those in *-rode* mostly Carlovingian; most of those in *-feld*, *-bach*, *hausen*, *-darf*, *heim*, etc. Older names are those in *-ingen* (*e. g.* Göttingen), *-ithi*, *-lari*, *-mar*, etc. *Göttingen* is more than a thousand years old.

Schultze (*Dr*) Demonstration des Croy-Teppichs. (Ibid., 81.) Brief description of a remarkable piece of tapestry, with figures of historical characters of the period, made in 1554, and once on the walls of the ducal castle in Wolgast.

Schwalbe (G.) Bericht über die Thätigkeit der Commission für eine physisch-anthropologische Untersuchung des Deutschen Reiches. (Ibid., 75–79.) Outlines program and method of proposed anthropological investigation of the population of the German Empire, by a committee of the Society at a cost of some 360,000 M., spread over a period of perhaps ten years. The schedule to be employed is appended.

—— Ueber das individuelle Alter des Neanderthalmenschen. (Ibid., 92–94.) Criticizes Walkhoff's contention that the bones of the Neanderthal man belonged to an individual *ca.* 30 years of age. Dr S. believes him to have been between 40 and 65, — the evidence considered is the condition of the femur and the skull.

Seger (—) Berichte über die Thätigkeit der Commission für den Schutz der vorgeschichtlichen Denkmäler. (Ibid., 79.) Gives recommendations of committee on preservation of prehistoric monuments: Passage of special laws, institution of care-takers for prehistoric antiquities, strengthening and better endowment of museums with funds for investigations, etc.

Singleton (A. H.) Dairy folk-lore and other notes from Meath and Tipperary. (Folk-Lore, Lond., 1904, XV, 457–462.) Treats of May-day customs, "overlooking" cattle, "wise woman (*pishogue*)," folk-medicine, marriage charms, superstitions.

Sökeland (—) Ueber das Berliner Trachtmuseum. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 148–149.) Notes that the "Custom Museum," founded by Virchow, has been taken over by the Prussian government as a part of the Ethnological Museum at Berlin. A *questionnaire* has also been prepared.

von Stenin (P.) Dr A. A. Iwanowsky's Anthropologie Russlands. (Globus, Brnschwg., 1905, LXXXVII, 198–200.) Résumés chief facts of Ivanowski's monograph on the anthropology of Russia published in the Proceedings of the Imperial Society of Devotees of the Natural Sciences, Anthropology and Ethnography (University of Moscow) for 1904, with a bibliography of 38 pages. The Slavs are anthropometrically a very mixed group, and the Great Russians vary much in physical type from place to place,— the Little Russians also. The Poles are nearest the Great Russians, and of the non-Slavs the nearest to the latter are the Syrjanians. The Lapps, Letts, Mordwins, the Little Russians of Kiev, the Armenians, Ossetes, the Kumyks, the Kurds — Persians and Transcaucasian Tartars (one group), the Central Asiatics (Kirghiz, Tarantches, Afghans, Sarts, etc.) in one group, Karakirghiz and Turkmen, the Mongols, are separate anthropological groups. The Yakuts, Buriats, and Northern Tungus belong together. The Ainos and Ostiaks are two other separate groups. I.'s work is accompanied by maps of distribution of color of hair and eyes, stature, cephalic index.

Svenonius (F.) Den nya Norrbottenskartan, med särskildt afseende på ortnamnens stafning. (Ymer, Stockholm., 1904, XXIII, 400–406.) Treats of Norse,

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Lapp, and Finn names on the new map of North Bothnia, their orthography, etc.

Thilenius (G.) Krōte und Gebärmutter. (Globus, Brnschwg., 1905, LXXXVI, 105–110, 3 fgs.) Discusses, with references to the literature of the subject, the votive toads and frogs of wax, iron, silver, in South German folk-lore and folk-custom, the connection in folk-thought between the womb and children and the frog and toad, etc., and related phenomena in folk-medicine. The origin of these "magic" relations is in doubt, — perhaps they sprang from some resemblance between the uterus and the frog in form, combined with the idea that women sometimes gave birth to such creatures.

Traeger (P.) Ueber die Jürüken und Konjaren in Makedonien. (Z. f. Ethnol., Berlin, 1905, XXXVII, 198–206, 11 fgs.) Describes the Yuruks of lake Langa (industries, — "the most industrious people in Macedonia, according to Beaujour; physical characters, — Mongol element noticeable) visited by author in 1901. Also notes on the Konyars of southwestern Macedonia, also immigrants from Asia Minor. Their carpets are well-known.

Variot (G.) L'atrophie infantile comme facteur de l'abaissement de la taille dans les faubourgs de Paris. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 633–637.) From the observation, by himself and collaborators, of more than 3,000 children (from birth and for several months) in 1892–1904 at the Belleville free dispensary, Dr V. comes to the conclusion that digestive troubles and the inanition resulting therefrom (or "prolonged infantile atrophy") are a prime factor in lowering the stature of Parisian man of the faubourgs. The child exists, or vegetates, rather than grows or increases in weight and stature. Food is very important here.

Vauville (O.) Fonte d'armes de l'époque du bronze à l'époque gauloise dans le département de l'Aisne. (Ibid., 492.) Notes on the fragment of a bronze sword belonging to the bronze age, but recast during the Gaulish epoch. This recasting would account for the disappearance of many bronze age weapons.

Veblen (A. A.) Recent archeological investigations in northern Europe. (Iowa J. Hist. & Pol., Iowa City, 1905, III, 453–455.) Notes on burial mounds, boat burial, etc. In prehistoric times the great center of human development in northern Europe was around the Baltic sea. In the iron age culture ran up the Norwegian coast. The oldest important relics are bronze (*ca.* 1700–500 B.C.).

Verneau (R.) Crâne de Baoussé-Roussé. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 559–561.) Describes a plaster-cast of one of the negroid skulls from the Grotte des Enfants, presented to the Society by the Prince de Monaco.

Verworn (—) Ein altsächsisches Gräberfeld bei Grone in der Nähe von Göttingen. (Corr.-Bl. d. deutschen Ges. f. Anthrop., München, 1904, XXXV, 48.) Brief account of excavation of four graves and contents belonging to the seventh to ninth centuries. In one a horse and man were buried together.

Vram (U. G.) Osservazioni antropologiche nel Montenegro 1902. (A. d. Soc. Rom. di Antrop., 1905, XI, 183–195.) Gives details of cranial measurements, etc., of 35 individuals (8 from Dubido, 10 from the prison at Podgorizza, 6 from Nickmaras, and 9 from other places, all Albanians), — all males, except 4. The cephalic index ranges 75.1–92.1, and 24 out of 34 lie between 85 and 90 (29 brachycephalic). The sphenoid form of head is most common (19 out of 34) and the oval form of face (14 out of 29). Tattooing is rare.

W. (R.) Die Gewichtssysteme des XI. und XII. Jahrh. in den jetzigen Russischen Ostseeprovinzen. (Globus, Brnschwg., 1905, LXXXVII, 206.) Résumés article by Dr J. Sachssendahl in the *Sitzgb. d. Gelehrt. Estn. Ges.* (Dorpat) for 1904 on the weights of the Baltic provinces in the twelfth and thirteenth centuries. The weight-sets (3 to 10) are of two types, one duodecimal in distinction, the other with no marked divisions.

Weber (F.) Spuren des Menschen der Bronzezeit in den Hochalpen des deutschen Sprachgebiets. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1905, XXXVI, 2–7.) Discusses the traces of man of the bronze age. Neolithic man did not climb the mountain-heights; in the German high Alps prehistoric paths led over several passes. The remains discovered are of an individual character,

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lost objects perhaps, indicating travel and trade of a sedentary people, lasting through the older stages of the Hallstatt period.

Weissenberg (S.) Die Fest- und Fasttage der südrussischen Juden in ethnographischer Beziehung. (Globus, Brnschwg., 1905, LXXXVII, 262–271, 9 fgs.). Treats of the festivities and fasts, etc., relating to the Sabbath (physical labor avoided, but shops kept open), the month Elul, (Aug.-Sept.), New Year's festival (Rosch Haschanah, the ten penitential days, the day of atonement (Jom Nippur), the festival of arbors (Sukkoth), The Maccabæan festival, the festival of lots (Purim), the Passah festival, the festival of weeks, destruction of the temple, day of the new moon.

Weston (Jennie L.) The "Scoppio del Carro" at Florence. (Folk-Lore, Lond., 1905, XVI, 182–184.) Brief account of annual ceremony as performed at Easter, 1904. The shape of the *carro* is curious and the elaborate decoration of the oxen is suggestive of a sacrificial origin.

Wherry (Beatrix A.) Miscellaneous notes from Monmouthshire. (Ibid., 63–67). Treats of fairies (child-stealers), underground music (fiddler), banshee, folk-medicine, wooing and wedding customs, burial ceremonies, etc.

Wilser (L.) Die Etrusker. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 52-53.) Discusses briefly Rhætian place and river names, physical characters, language, etc. W. holds that both the Rhætians and Etruscans were Aryans, belonging to the long-headed blond North European race. Clothing, weapons, writing, art, religion ally them with the Aryan stock (particularly the Hellenic branch). The text of the Agram mummy-cloths (1,200 words legible), according to W., proves the Aryanism of the Etruscans in speech and the affinities of their tongue with ancient Greek.

—— Ueber Pytheas und sein Nordlandfahrt. (Ibid., 60.) Pytheas in his famous northern voyage did not reach the Baltic proper. He was the first to record in writing the names Cimbri, Teutons, Goths. Others hold that Pytheas came into the Baltic and that the Tanais was one of the great rivers of Germany emptying into that sea.

Zaborowski (S.) L'âge des sépultures de Chamblandes en caisses de pierre à squelletes repliés. (Bull. Soc. d'Anthr. de Paris, 1904, N. S., V, 610–615.) Discusses recent publications of Schenk, who holds that the men of Chamblandes entered Switzerland from the south before the arrival of the brachycephalic builders of lake dwellings. Z. holds that there exists a certain synchronism between the graves of Chamblandes and the lake-dwellings belonging to the last phase of the neolithic age. The Worms necropoli of Dr Koehl are also contemporaneous.

—— Origine des Slaves. (Ibid., 671–720.) In this detailed monograph, in which are discussed the Veneti (the oldest Slav people, — who burned their dead and propagated brachycephalism) and their physical and other characters, archeological remains, graves and customs connected therewith, mingling with other people of central and western Europe, etc., ethnographic resemblances between the Bretons and Carpathian peoples (due to Hallstatt-Gallic survivals),— in fact all aspects of the question of Slavic origins, — Z. concludes that the Slaves *in situ* are the descendants and representatives of the brachycephalic race who practised incineration,— the incinerating peoples of Illyria, Pannonia, Bohemia, etc., were Slavs, or their ancestors. The head-dresses of the Hallstatt epoch, *e.g.*, are represented by the covers of cinerary urns still in use on the upper Vistula, in Moravia, and in the Carpathians. The Slav type arose in the Danubian region by modification of the Protaryan and Thracian stock. The remains at Glasenac (1100 B.C.) indicate the appearance of a new people, whose progress is marked by incineration of the dead and the expansion of "Hallstatt industry."

Zechlin (K.) Ueber Silexmanufakte in der Altmark. (Z. f. Ethnol., Berlin, 1905, XXXVII, 209.) Notes on flint-arrowheads and other implements, large and small, found in gravel-pits in various parts of Altmark, particularly near Salzwedel.

Zirngast (*Dr*) Ueber das Wachstum der Schüler. (Z. f. Schulgesndtspfl., Berlin, 1904, 695–646.) Discusses the stature-growth of 278 students of the Emperor Francis Joseph Gymnasium, Mähr.-Schönberg, measured (since (1894–5) at the beginning and end of

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each semester. Those of the first three classes grew more in the first semester; those of the fourth class showed no distinction; those of the higher classes grew more in the first semester. The students of all classes grew faster in vacation than in school time. The maximum of growth increase is reached in the third class, augmenting from the first. Then the average increase varies little, and the fifth class sees a decline.

AFRICA

Bazley (W.) Exploration of a Bushman's cave in Alfred county, Natal. (Man, Lond., 1905, 10–11, 3 figs.) Describes excavation of deposit (several strata) and human (three skeletons) and other remains discovered. At a depth of 16 feet below the floor "thousands of scrapers of all sizes, some not larger than a finger-nail, also cores, chips and flakes, by the cart-load, with a few arrow-heads and knives, but mostly broken," were found. In the upper strata other human remains and stone implements occurred.

Berkhan (O.) Helwân, ein Kurort in der Wüste. (Globus, Brnschwg., 1905, LXXXVII, 117–119, 2 figs.) Brief account of Helwân, a sanitarium, in the desert south of Cairo.

Bertholon (L.) L' année anthropologique Nord-Africaine 1903-04. (Rev. Tunisienne, 1904, extr., pp. 16.) Résumés anthropological literature concerning northern Africa.

—— Origine néolithique et mycénienne des tatouages des indigènes du Nord de l' Afrique. (A. d' Anthrop. crim., Paris, 1904, XIX, 756–786, 59 figs.) In this monograph the author compares the modern tattooing of the natives of northern Africa with the statuettes, etc., of the neolithic period of eastern Europe, and attributes to the former, with other elements in the culture of the Berbers, etc., the civilization of neolithic Europe, particularly in the Mycenean region.

Cartwright (Minnie) Folk-lore of the Basuto. (Folk-Lore, Lond., 1904, XV, 244–263.) Treats of cannibalism and ghosts, charms, spirit of maternity, customs connected with birth of first child, child-birth, wooing and marriage, woman's property (hut), death and funeral practices, avoidance of name of dead (among older and less civilized), "Thokolosi" (a baboon-like evil spirit and poisoner, etc.). The English text of "The Maid and her Snake-lover" is also given.

Deyrolle (M.) Sanctuaires à poterie néolithiques et dolmen moderne en Tunisie. (L'Anthropologie, Paris, 1904, XV, 373–375, 1 fg.) Treats of the *khallowa* or ex-voto sanctuaries (often ancient sepulchral monuments) of northeast Tunisia. That of Aïn Bathia is interesting, being really a *modern dolmen* erected by the Arabs. Close at hand are the remains of a Byzantine fort, and of a Roman town.

Hutter (*Hptm.*) Völkerbilder aus Kamerun. (Globus, Brnschwg., 1905, LXXXVII, 235–238, 301–304, 365–370.) Discusses linguistic relations (Hamitic tongues: Kanuri, Arabic, Fula; Logon group: Makari, Musgu, Marghi, Batta; Falli; Mbum group: Mbum, Bai, Tikar; Fan, — Bantu); Haussa; the so-called dwarf-peoples (H. thinks the pygmy riddle will be solved rather in Asia and Europe than in Africa); the Fan (noticeable political decentralization; dwellings; rudiments of phallic cult); Sudan Negroes (dwellings, clothing, religion); Arabs (Shoa, — people had to give up camel for cattle); Fula (the chivalric) and Haussa (mercantile element) of Sudan.

Kirk (J. W. C.) Specimens of Somali tales. (Folk-Lore, Lond., 1904, XV, 316–326.) Gives English texts of eleven brief tales (the native versions are soon to be published) from men of the Ishhak tribes from the Burao district. A note by E. S. Hartland discussed some of the incidents. H. attributes the defects of certain tales to the fact that they were not told by women, who are "notoriously the best tellers of *märchen*." Some Arab additions are indicated.

Passarge (S.) Die Mambukuschu. (Globus, Brnschwg., 1905, LXXXVII, 229–234, 295–301, 26 figs.) Treats of habitat, anthropological characteristics, clothing and ornament (women's dress more than men's), dwellings, implements and weapons (one type of hut-group resembles that of the Ovambo, another that of the Bechuana; conical huts, mat-huts), beds, iron-forging, bow-and-arrow (arrow held between second and third fingers of right hand), drum (reverenced as a god) called *moróba*, river and island

life of natives, agriculture and cattle-breeding (formerly much more important), hunting (spearing hippopotamus, shooting antelopes with poisoned arrows, traps for hyenas, etc., — fishing is not practised), trade and industries (commerce with Bushmen, — ostrich shells, feathers, etc.) social and political conditions (chief and council of family-heads), language (vocabulary of 150 words and a few phrases), etc. The Mambukushu belong to the Bantu stock and are closely related to the Barutse, both in speech and culture.

Read (C. H.) A necklace of glass beads from West Africa. (Man, Lond., 1905, 1–2, 1 pl.) Describes necklace from tomb of a renowned chief at Mansu on the route from Elmina to Kamasi, — the crystalline glass is "identical in appearance with those from the tombs at Camirus in Rhoades, dating from the sixth century." This first find in Africa of "glass beads of classical style" is a new datum of great importance.

Seidel (H.) Togo im Jahre 1904. (Globus, Brnschwg., 1905, LXXXVII, 238–241.) After January 1, 1906, English will no longer be taught in the mission schools of Togo.

—— Erste Namengebung bei den Evhenegern in Togo. (Ibid., 176–177.) Based on articles on Evhe names by Spiess in *Afrikanische Studien* for 1903 and 1904. At birth comes the day-name (from names of the days of the week), eight days later the child is given a second name by the father. These consist of fear-names, shame-names, names of occasion, wish-names, names from personal peculiarities, devotional names, etc. When converted to Christianity the negro keeps his day-name, *e. g.*, Julie *Afuwa*, and, it might be said, Robinson's man *Friday*.

Seiner (F.) Die Wichtigsten neuen Aufgaben in Deutsch-Südwestfrika. (Ibid., 165–168.) Author advocates strict treatment of the aborigines with fixed reserves, the giving up of them as laborers, etc.

Sewell (R. B. S.) A study of the astragalus. (J. Anat. & Phys., Lond., 1904, XXXVIII, 233–247, 4 pl.). Based on examination of more than 1000 human astragali, of which a large part were obtained from Egyptian graves (from prehistoric to Roman era). The index of length-breadth averaged 78, ranging from 66.7 to 91.7; the greatest length averaged 50 mm., ranging from 41 to 65 mm., greatest breadth averaged 39 mm., ranging from 32 to 48 mm.

Sheppard (W. H.) Light in darkest Africa. (So. Wkmn., Hampton, Va., 1905, XXXIV, 218–227, 5 fgs.) Contains notes on King Lukenga, the Zappo-Zaps and their chief, Malumba N'kusa etc.

Spiess (C.) Zeitrechnung bei den Evhe in Togo. (Globus, Brnschwg., 1905, LXXXVII, 173–174.) Notes on record of time by notch-cutting, marks or door, wall, etc., placing grains of corn in vessel, bundles of grain, etc. Time of day is told by position of sun, distance by time of eating meal, etc.

Tate (H. R.) Further notes on the Kikuyu tribe of British East Africa. (J. Anthr. Inst., Lond., 1904, XXXIV, 255–265, 2 pl.) Treats of painting and tattooing of unmarried youths and maidens, habitations (unmarried sleep by themselves), swimming (side stroke only), basket-work, string, leather-work, fire (drill, fire-god with she-goat sacrifice), food, cooking, drinks, meals (day-break meal-time), religion, fetishes, obsession and possession, spiritualism, idolatry, spirits and demons, nature-spirits, polytheism (two good gods and one bad), worship, dance-festivals, ceremonies, etc., circumcision (only a custom).

Wake (C. S.) Traits of an ancient Egyptian folk-tale compared with those of aboriginal American tales. (J. Amer. Folk-Lore, Boston, 1904, XVII, 255–264). Discusses Egyptian tale of the Two Brothers (nineteenth dynasty), whose opening episode resembles the story of Joseph and Potiphar's wife. Compares with Arapaho legends (Lightstone, the sun, sleepy-young-man and the cannibals, etc.), the Celtic "Battle of the birds," the classic Eros and Psyche, etc. W. seems to explain them all as sun-myths.

Wasserbindung (Die) zwischen Niger und Tsadsee. (Globus, Brnschwg., 1905, LXXXVII, 168–173, 187–190, 11 fgs., map.) Describes, after his recent book *La grande route du Tchad* (Paris, 1905), Lenfant's journey from Garua on the Benue, up the Mao-Kebi, and through Lake Tuburi to Logone, the

great left tributary of the Shari. Contains notes on the palace of Gontiome in Lere, the Mundang tribe (their houses, etc.), the people of Musgu, etc.

Weeks (J. H.) Notes from the Upper Congo, III. (Folk-Lore, Lond., 1904, XV, 326–331.) Gives, with some explanatory notes, the English text of two legends relating to Libanza, "the nearest equivalent we can get to God." God with these natives consists of "four persons all seeming equal, and each supreme in his own department."

Westermann (D.) Ueber die Begriffe Seele, Geist, Schicksal, bei dem Ewe- und Tschivolk. (A. f. Religsw., Lpzg., 1904, VIII, 104–113.) Treats of the etymology and meanings of the words for "soul," "spirit," "fate," etc., among the Ewe and Tshi negroes of Western Africa. The pre-existing soul and protective spirit, personal principle, etc., of man, is called in Ewe *aklamâ*, Tshi *okra*. After death it is no longer "soul" but "spirit, ghost," and is then Ewe *ɳɔli*, Tshi, *sɛsâ*, or *ɔsamaɳ*, and is dangerous until it receives a second incarnation,—the child repeats the ancestor. Another word for "soul" is Ewe *luwɔ*, Tshi *suɳsum*, "shadow,"—these are used in the Christian literature for "soul." *Aklamâ* signifies also "fate, fortune, luck."

Westermarck (E.) The magic origin of Moorish designs. (J. Anthr. Inst., Lond., 1904, XXXIV, 211–222, 1 pl., 52 fgs.) Dr W. produces evidence to show that "belief in the evil eye has exercised a very extensive influence on decorative art." People endeavor to "protect their property from the envious eyes of their fellow-men," by patterns representing the human hand, the figure five (five fingers), the cross (as a five, etc.), and its derivatives, intersecting squares (as pair of eyes), combinations of hand and eye, the eye itself (colossal sometimes), triangle (for eye), conventionalized eye and eyebrow. Many of the familiar patterns on rugs, carpets, tapestry, wall-paper, trays, china, etc., have such a "magic" origin.

—— Midsummer customs in Morocco. (Folk-Lore, Lond., 1905, XVI, 27–47.) Treats of fire-ceremonies for purifying men and animals, water rites (at midsummer all water is endowed with magic energy), earth throwing, evil-eye charms, eating-ceremonies (a means of transferring blessings). Although the Moorish midsummer customs have an Arabic-Hebrew name, they may be genuine Berber rites. Purification ceremonies at midsummer occur only in Europe and northern Africa, and Dr W. thinks they may "date from a period when such ceremonies were common to the Mediterranean race." He thus favors the hypothesis of "a racial affinity between the Berbers and most European nations of the present day."

Zaborowski (S.) Races de la primitive Égypte. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 600–610.) Résumés recent articles by Flinders Petrie and J. Kollmann, and Chantre's *Recherches anthropologiques en Ægypte* (Paris, 1904). According to Petrie, Upper Egypt had but one prehistoric indigenous type (aquiline), long-faced brachycephalic, proto-Semitic (Zaborowski); Kollmann recognizes four. Z. does not admit the existence of real brachycephals in prehistoric Egypt, and no indigenous broad-headed race ever existed there. Chantre's data indicate a continuity of Egyptian race and culture, no entire foreign stock having ever settled in Egypt and founded a civilization by oppressing or destroying the indigenes. Although owing not a little (*e. g.*, obsidian, copper, etc.) to Asia, the Egyptians were essentially Africans. The pottery and ivory marks of Negada may be connected with Libyan writing, the *graffiti* also.

ASIA

Adachi (B.) Häufigeres Vorkommen des Musculus sternalis bei Japanern. (Z. f. Morphol. u. Anthrop., Berlin, 1904, VII, 133–141.) The muscle in question was found in 13.2 percent of 129 corpses (European percentage is 3.2–5.3 percent) and in 15 percent of 500 living individuals.

—— (B. *und* Y.) Die Fussknochen der Japaner. (Mitt. d. med. Fak. d. k.-Jap. Univ. Tokyo, 1905, VI, 307–344, 2 pl., 7 fgs.) This excellent study by Dr and Mrs Adachi of the bones of the Japanese foot is based upon a selection of the feet of 25 adult Japanese (men 15, women 10) and of 10 adult Europeans. Details of form, measurements, etc., of the separate bones are given. Also bibliography of subject. The foot-bones

of the Japanese in general are smaller and relatively thicker and shorter than those of Europeans. They have also more marked attachments for muscles, etc., and larger and more curved articular surfaces; some of these are culture-deformities. The European foot (due to the shoe, etc.) is stiffer, and the first and second toes much less mobile (every adult Japanese can use these more or less). Many minor differences exist.

Becker (C. H.) Islam. (A. f. Religsw., Lpzg., 1904, VIII, 129–143.) Brief critical reviews of numerous recent (1902–1904) books and articles relating to various aspects of Mohammedanism; General, life of Mohammed, Koran and tradition, etc., orthodoxy, law and ethics, dogma, mysticism, heterodoxy, heathen substrate.

Birkner (F.). Beiträge zur Rassenatomie der Chinesen. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 144–148, 7 fgs.) Gives results of examination of six heads of Chinese, (three with respect to facial musculature), with X-rays, plaster cast, lead wire for profile, etc. Three heads show marked variation in facial muscles as compared with the European; the Chinese face is also flat. The highest point of the cheek-bone in Chinese is farther from the ear-nose line than in Europeans, and lies also farther forward. More details are given in the author's *habilitationschrift* on the same subject (1904).

Bracht (E.) Ueber datierbare Silexgeräte aus den Türkisminen von Maghara in der Sinaihalbinsel. (Z. f. Ethnol., Berlin, 1905, XXXVII, 173–188, 2 pl.) Gives results of the examination of 650 flints found in 1880–1881 at the turquoise mines of Maghara in the Sinai peninsula. According to B. these flints were used to mine turquoise by the Egyptians of the time of Rameses II, and the abandonment of the mines soon after (no inscription of his son and successor, Merneptah, occurs) may have been due to the exodus of the Jews. At Maghara an old stone-age industry continued into the ages of metal. Some notes by W. Flinders Petrie are appended and discussed.

Brandenburg (E.) Ueber Kysylbasch- und Jürükendörfer in der Gegend des Turkmendag. (Ibid., 188–198, 10 fgs.) Treats of habitat (Yuruks nomadic, half-nomadic, sedentary; Kizilbash mostly in villages), dwellings (often richly ornamented with wood-carvings), clothing, burials, religion, personal habits, etc., of the Kizilbash and Yuruks of the Turkmendag, visited by B. in 1901–1904. Some Kizilbash have settled in Bulgaria and Rumania, in the Maritza valley particularly.

Brown (A. J.) Yuan Shih Kai. (So. Wkmn., Hampton, Va., 1905, XXXIV, 111–118.) Sketch of the viceroy of Chih-li, commander-in-chief of the Chinese army and "the most powerful present factor in the policy of the Chinese Empire," his achievements, etc.

Corner Ohlmütz (Caroline). Heathen rites and superstitions in Ceylon. (Nineteenth Cent., Lond., 1905, 133 ff.). Discusses Sinhalese belief in demons, in hours and times most favorable, when they in turn are most accessible (the so-called "yama"), and in bodily conditions propitious for obsession. Author gives dramatic account of exorcising of a demon from a young girl from near Colombo. Other methods having failed she was taken to a temple (near Candy) of the powerful evil demon Dewiyo, where the priest succeeds, aided by votive offerings and corporal punishment upon the girl.

Fischer (A.) Ueber die Kachin im äussersten Norden und Nordosten von Birma. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 123–126.) Treats of habitat, physical characters (cross with Tareng), spirit-worship, offerings to thunder-god, artistic posts of altar-place to which sacrificial cattle are tied, augury from entrails, dwellings (large and rather clean), marriage and family (polygamy and bride-stealing rare, in the latter case the bride is dragged through an improvised "jungle"), clothing and ornament (peculiar "ear-rings," and hiprings), division of labor (husband does field work), graves and funeral ceremonies. The Kachin present possibilities of a higher culture.

François (C. H.) Notes sur les Lo-lo du Kien-Tchang. (Bull. Soc. d'Anthr. de Paris, 1904, Ve s., V, 637–647, 4 fgs.) Describes situation, relation to Chinese government, physical characters, clothing, personal habits (baths abhorred),

dwellings, family (monogamy general), attitude toward foreigners (only Chinese hated), etc., of the Lo-lo, aboriginal people of the Kien-Tchang region, known to the Chinese as "Man-Tsen," a term of opprobrium. Chinese mandarin rule has not improved the Lo-lo.

Harris (J. R.) Notes from Armenia, in illustration of *The Golden Bough*. (Folk-Lore, Lond., 1904, XV, 427–446.) Cites items in support of Mr Frazer's arguments, from various parts of Armenia. The topics considered are: Annual rain-charm (all over Armenia), occasional rain-charm (Turk pebble-charm, etc.), Armenian Candlemas, animal sacrifices, sin-eating, foundation sacrifice, offering of the first-fruits, holy trees, curious child-birth customs.

Hartland (E. S.) A votive offering from Korea. (Ibid., 447–450, 1 pl.) Brief account of cast-iron "tiger" from shrine on top of Charyong Pass, south of Gensan, with ntoes on Korea religious ideas.

Hellwig (A.) Die jüdischen Freistädte in ethnologische Beleuchtung. (Globus, Brnschwg., 1905, LXXXVII, 213–216.) Discusses the counterparts of the Jewish "city of refuge" (form, content, purpose of right of refuge) in Africa (Abyssinians, Kabyles, Gold coast) and other regions of the globe. H. concludes that "there is no trait in the Jewish city of refuge idea that is not to be found somewhere else in the world." The general subject has been treated by the author in his *Das Asylrecht der Naturvölker* (Berlin, 1903).

Karutz (R.) Von den Bazaren Turkestans. (Ibid., 312–317, 329–333, 8 fgs.) Describes bazaars in Bokhara, Tashkend, Samarkand, and Kokand, the articles sold, etc. Among liquids tea plays the largest rôle. Tea is drunk at all times and seasons from morning to night.

Kellner (M.) The Hammurabi code and the code of the covenant. (Rec. of Past, Wash., 1905, IV, 99–118, 5 fgs.) Comparative study. Professor K. concludes that the Hebrews appropriated legal provisions as well as legends and institutions from the ancient Babylonians. Thus, "the enactments of the old Babylonian king, formulated in the twenty-third century B.C., passed more than 1,000 years later into the Book of the Covenant, and so became the heritage of the Hebrews and of the world."

Körtel (A.) Phrygisches. (A. f. Religsw., Lpzg., 1904, VIII, 150–154.) Résumés the important data concerning ancient Phrygian religion contained in G. and A. Körte's *Gordion* (Berlin, 1904), based on excavations carried out in the summer of 1900 at Gordium.

de La Mazelière (M.) L'évolution de la famille japonaise. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ s., V, 650–671.) Sketches, after the *Kojiki* (712 A. D.) and subsequent documents, the history of the family in Japan,—the civil code is also analyzed (pp. 665–670). Of primitive Japanese society almost nothing survived, except the ancestor cult. In the VI–VIII centuries Chinese influences were felt and under Confucianism marriage-forms became fixed. Shinto-Confucianism and Buddhism also modified customs, etc. Japanese feudalism and *Bushido* had their effects in strengthening paternal authority. The era of thinkers (eighteenth century), the revolution of the nineteenth, the triumph of the Mikado, and the impetus to individual emancipation given by European and American contact, are other important facts. The author sees reflected in the terms of the Code the conflict between the communal constitution of Japanese society and the individualistic influence of European civilization. If individualism wins, the civilization of Asia will one day fuse with that of Europe; otherwise, they will simply influence each other much, but never unite.

von Landau (—) Ueber prähistorische Funde unweit Sidon und Gebeil, Byblos. (Z. f. Ethnol., Berlin, 1905, XXXVII, 209–211.) Describes some round amulet-stones from Saida and the Lebanon region, and a celt, in form resembling the smaller West African axes, from a grave of the classic period at Gebeil (Byblos), —buried with the dead, having been also used as an amulet.

Laufer (B.) Zur Geschichte der chinesischen Juden. (Globus, Brnschwg., 1905, LXXXVII, 245–248.) Discusses the evidence of the inscriptions of K'ai fong fu as to the coming of Jews to China, where they were found (in Honan) by the Jesuits in the early part of the eighteenth century, having been there for centuries. Dr B. derives the Chinese Jews from India, and thinks that "Judaism is not older, as has been pre-

viously thought, but later than Islam in China." The existence of a colony of Jews in Hong-Kong and Shanghai, who speak Arabic, shows the same condition of affairs as in the ninth century.

Libbey (W.) Jerash. (Rec. of Past, Wash., 1905, IV, 35–46, 10 fgs.) Chapter from Prof. L's book *The Jordan Valley and Petra* (N. Y., 1905) treating of the stupendous ruins of Jerash (Gerasu), "second only to Palmyra in size and importance, and second only to Baalbec in beauty of architecture." A Circassian colony has settled here and built inscribed stones into their lintels and doorposts, likewise clearing spaces for farms among the ruins.

Lorenzen (A.) Die chinesiche Weltkarte Ferdinand Verbiests von 1674. (Globus, Brnschwg., 1905, LXXXVII, 157–159.) Notes on the history of the cartography of China and Verbiest's map of 1674.

Marquand (A.) The facade of the temple of Apollo near Miletus. (Rec. of Past, Wash., 1905, IV, 3–15, 10 fgs.) Discusses various theories (Rayet, Haussoullier, Wernicke). Prof. M. considers Haussoullier's theory the most reasonable and concludes that the entire facade, consisting of foundations, columns, and entablatures, belongs to one building period *ca.* 150 B. C.

P. Die Stadt Mangaseja und das Mangasejische Land. (Globus, Brnschwg., 1905, LXXXVII, 222–223.) Résumés a recent article by Anutchin in the *Zemlevědènje*, where the name *Mangaseja* is discussed in detail, — variants are Molgomzey, Molgonjej, Mangonseja, Mungasej, etc. The word may signify "those living at the outer edge," a term describing the Yuraks in their relation to the Samoyeds.

Prince (J. D.) *and* **Law** (R.) The Pierpont Morgan Babylonian axe-head. (J. Amer. Orient. Soc., N. Y., 1905, XXVIII, 93 ff.) Discusses Babylonian (*ca.* 3000–2300 B. C.) votive axe-head made of agate in layers, with dedicatory inscription on obverse side, now in the Tiffany gem collection of the American Museum, New York. It is perforated for a handle.

Rössler (E.) Bericht über archäologische Ausgrabungen in Transkaukasien. (Z. f. Ethnol., Berlin, 1905, XXXVII, 114–151, 119 fgs.) Gives results of excavations of 14 graves on the left bank of the Kotchar, north of Bajan, and a *kurgan* containing 18 on the right bank to the south (with descriptions of urns and other ceramic remains in particular) during February and April, 1901. The graves belong to the bronze-iron period and are chiefly chest-graves. Among the objects found are: Arrow and spear points, needles, beads, rings, bracelets, knives, daggers, shells, ornaments and other objects of *ferblanc*. The *kurgan* seems to have been a family burial place. Marking-stones of a phallic sort might indicate the graves of males. Altogether these graves suggest comparison with those of Helenendorf, though the mode of construction is different, and are probably contemporaneous with the chief group of the latter, and belong to the end of the later Caucasian bronze period, *ca.* 600 B. C. The graves belong to an Aryan people, perhaps, as the form of skull, head-dress, etc., suggest the ancestors of the present Haik population of Bajan.

Schmidt (H.) Troja-Mykene-Ungarn. (Ibid., 1904, XXXVI, 890–891). Additional notes and corrections to article reviewed in *American Anthropologist.*

Schwally (F.) Zur Heiligenverehrung im modernen Islam Syriens und Nordafrikas. (A. f. Religsw., Lpzg., 1904, VIII, 85–96). Treats of saint-worship and sanctuaries in Syria and northern Africa. In the former female saints are few; in the latter very numerous, a fact connected with the position of woman as prophet and magician from time immemorial among the Berbers. The number of sanctuaries is enormous, and survivals from older heathendom are seen in the sacred trees, springs, and other natural objects. In Syria both Christians and Mohammedans visit the shrines, and some Christian characters, like Simon Stylites, Sergius and Thekla, are included among the saints of Islam. Jewish and Christian renegades sometimes turn *marabouts*. These saints serve some useful purposes as peace-makers, and they afford refuge to fugitives and help the robbed and the injured, sick, etc. The folk-belief in them is great and abiding.

Shearme (D.) The shwe-hmu, or Burmese taxgather. (Folk-Lore, Lond.,

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1904, XV, 334-335.) Brief account of office and procedure. The *shwe-hmu* also acts as judge, arbiter, etc. Whoever in fair fighting (use of iron prohibited) was able to deprive the *shwe-hmu* of his scales (the insignia of office) succeeded him, — stealing and fraud were excluded. If the claimant failed he was fined.

Starr (F.) The hairy Ainu of Japan. (Iowa J. Hist. & Pol., Iowa City, 1905, III, 423-427.) Notes on history, houses, etiquette, bear hunting and bear feast, improvised songs (home-coming), physical characteristics. Prof. S. believes that the Ainu who are "a white race," were once the sole population of Japan, — they have been beaten back, like the Indians in America. They are not the ancestors of the Japanese.

Vollers (K.) Die Symbolik des Mash in den semitischen Sprachen. (A. f. Religsw., Lpzg., 1904, VIII, 97-103). In ritual *mash*, — the root is common Semitic, — is identical with the "washing" before prayer, etc. "Rub, stroke, salve," etc., belong also here, then "bless, praise." From the rubbing away of a physical blemish was derived the symbolic use.

Wright (A. R.) Tibetan prayer-wheels. (Folk-Lore, Lond., 1904, XV, 332-333, 1 pl.) Brief account of two wheels and prayers. The characters in which the *om* formula is embossed are ancient Indian *ranja* of the seventh century.

—— Tibetan drum and trumpet. (Ibid., 333-334, 1 pl.) Brief notes on a trumpet made of the human thigh bone and a drum made of the caps of two skulls, with their bases covered with human skin. These trumpets are made with elaborate incantations, and preferably from the bones of criminals or those who have died by violence.

Wright (T. F.) The tombs of Gezer. (Rec. of Past, Wash., 1905, IV, 79-82, 3 fgs.) Brief account of the results of Macalister's excavations in the ruins of Tell Jezar (the Gezer of the Bible) near Jaffa, — tombs of the pre-Israelites, who use caves both for dwelling and burial purposes; later (Israelite) rock tombs, containing, among other relics Assyrian seals, Egyptian scarabs, etc.; tombs of the Maccabean period; Christian tombs with great quantities of lamps (some with Greek inscriptions).

Zaborowski (S.) Collection d'objets de toilette et autres du sud de la Chine. (Bull. Soc. d'Anthr. de Paris, 1904, V^e^ S., V, 632-633.) Brief notes on toilet objects, etc. (pillows, couch, shoes, hats, compass, flint and steel), from the province of Kwang-Hsi, in southern China, presented to the society by M. Beauvais.

INDONESIA, AUSTRALIA, POLYNESIA

Branco (W.) Ueber die fraglichen fossilen menschlichen Fusspuren im Sandsteine von Warnambool, Victoria, und andere angebliche Spuren des fossilen Menschen in Australien. (Z. f. Ethn., Berlin, 1905, XXXVII, 162-172, 2 fgs.) Résumés data concerning the "human" foot-prints in the Warnambool sandstone and other alleged traces of fossil man in Australia, — opinions of Archibald, Alsberg, McDowell, Bücking, Gregory, etc. B. concludes that "the foot-prints are human, but very narrow," and that the sandstone is old and not "merely a few centuries old," as Wilser suggested. The Wellington cave human molar and the marsupial (fossil) bone with marks of human implement are considered genuine.

Grabowsky (F.) Musikinstrumente der Dajaken Südost-Borneos. (Globus, Brnschwg., 1905, LXXXVII, 102-105, 9 fgs.) Brief descriptions of kettle-drums (*garantong*), and its melodies, — the chief pieces in Dajak orchestras, — drums proper (*gandang*), and the drum-like *gambang* and *bisak betong*. Of stringed instruments there are the *rabap* or *garadap* (borrowed from the Malays), which is played with a bow; the *kanjapi*, somewhat resembling the violin; the *gandang bawoi*. Of wind instruments the *sarunai* (clarinet), borrowed from the Malays; the flute; a hunter's whistle; the *garode*, a sort of oboe. Both adults and children use a "jew's-harp."

Gregory (J. W.) The antiquity of man in Victoria. (Proc. R. Soc. Vict., Melbourne, 1904, N. S., XVII, pl. I, 130-133.) Discusses among other things the Warnambool "human" footprints. G. thinks it possible they are human, — they may be wind-sports, — but, with others, gets from them the impression of *shod*, not naked feet. The bone-find of Buninyong he regards as accidental. G

considers that man is a comparatively recent inhabitant of Victoria, and was in no sense there in earlier geological periods.

Haferland (R.) Ueber einen Schädel mit einem Processus asteriacus. (Z. f. Ethnol., Berlin, 1905, XXXVII, 207–208, 1 pl.) Describes briefly a Fijian (male?) skull with a well-marked *process asteriacus*, a peculiarity not rare among Melanesians. The formation is probably atavistic.

Hagen (B.) Neu-Guinea. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., 1905, XXXVI, 22–23.) Résumé of address before Wiesbaden Anthropological Society. The Papuas are the primitive type, or *a* primitive type of man. Two different varieties of Papuas (one mostly coastal) exist, but the women of the two varieties differ little. Family and social life are briefly considered.

Holmes (J. H.) Introductory notes to the study of the totemism of the Elema tribes, Papuan gulf. (Man, Lond., 1905, 2–6, 1 fg.) Discusses tribal organization, marriage-laws, land-tenure, individual rights, tribal obligations. According to H., totem kinship has "a greater influence on the moral life" of the Elema tribes than conjugal or parental relationship. This influence of totemism is far-reaching, restrictive and preventive.

Howell (W.) *and* **Shelford** (R.) A Sea-Dyak love philtre. (J. Anthr. Inst., Lond., 1904, XXXIV, 207–210.) Describes briefly a *jayan* (love philter) obtained from a Sea-Dyak woman, with native texts and English translations of two typical incantations. Also incantation uttered by a woman who wishes to become attractive to men. The basis of all *jayan* is "coco-nut oil, which must be made by a girl who has not yet arrived at the age of puberty." Other ingredients, *e. g.*, the tears of a female porpoise (very potent), may be added. A needle in the stopper represents sympathetic magic.

Klaatsch (H.) Ubersicht über den bisherigen Verlauf und die Errungenschaften meiner Reise in Australien bis Ende September 1904. (Z. f. Ethnol., Berlin, XXXVII, 211–213.) Notes, among other things, discovery at King's creek of stone implements with pieces of fossil bones with evidence of human working; frontal bone of a new-born child at Princess Charlotte bay, with *Arcus supraorbitalis* suggesting the Neanderthal skull. Dr K. made many observations and measurements of the natives, collected specimens, etc.

Krämer (A.) Das neue Kolonialalphabet in seiner Anwendung auf die Südsee. (Globus, Brnschwg., 1905, LXXXVII, 293–295.) Discusses the new alphabet adopted by the Colonial Department of the German government for the spelling and pronunciation of geographic names, and severely criticizes some of the items.

Lampert (—.) Melanesien. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 59–60.) Notes on physical characteristics, culture, etc. Up to the period of contact with the Europeans the Melanesians were still in the stone age. The most marked feature of their culture is love of ornament; another is an impulsive spirit of adventure.

Lang (A.) All-fathers in Australia. (Folk-Lore, Lond., 1905, XVI, 222–224.) Discusses views of Howitt and Hartland. Author considers that in associating the All-father belief with advance in social organization, "Mr. Howitt has overlooked his own valuable collection of social facts."

Lasch (R.) Gregory über die ältesten Spuren des Menschen in Australien. (Globus, Brnschwg., 1905, LXXXVII, 90–91.) Résumés the article of J. W. Gregory (q. v.).

Maass (—.) Ta kā-kāi-kāi Tabu. Ein Beitrag zur vergleichenden Kenntnis der Malaio-Polynesier. (Z. f. Ethn., Berlin, 1905, XXXVII, 153-162.) Describes the *ta kā-kāi-kāi* ("it is forbidden"), the first and foremost "law" of the Mentawi islanders off the coast of Sumatra, and "a terrible moral weapon against the foreigner." The Mentawi custom is compared with the Sumatran — Malay *pantang*, Madagascar *fadi*, Dayak *uhum*, Micronesian *ugul*, and the Polynesian *tabu* with its varieties. The origin of these customs is due to the mental constitution of the Malayo-Polynesians and their peculiar psychological consciousness. Their fulfilment of the law of impulse is here represented.

Mathews (R. H.) The Wiradyuri and other languages of New South Wales. (J. Anthr. Inst., Lond., 1904, XXXIV,

284–305.) Brief grammatical sketches of Wiradyuri, Burreba-burreba, and Ngunawal, with vocabularies of 430 words in Wiradyuri and 290 in Ngunawal, classified under categories of family terms, parts of the body, natural objects, animals, trees and plants, weapons, adjectives, verbs. The Wiradyuri is more widespread than any other tongue in New South Wales. These languages have double forms of the first person, dual and plural, for every inflected part of speech.

Morris (Margaretta) Harvest gods of the Land Dyaks of Borneo. (J. Amer. Orient. Soc., N. Y., 1905, XXVIII, 165 ff.) Enumerates supernatural beings, lords of agriculture, of sun, moon and stars. Also the supreme being Tuppa (an agglomeration or accretion of functions) is discussed. These supernatural beings, with two human potentates are invoked for a blessing on the rice-fields. Miss M. regards Tuppa as a projection of the change in the Dyaks' natures from ferocity and cunning to the peaceful cooperation necessary to successful agriculture. The philosophy of the gods of the field is somewhat abstruse.

Nieuwenhuis (A. W.) Kunst und Kunstsinn bei den Bahau und Kĕnja-Dajak. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 82–84.) Discusses the art, art-motives, and art products of the Bahau and Kenyah Dayaks of Borneo. Many motives are of religious origin, and the human genital organs have served as models for a long series of beautiful ornaments, for use in adornment of houses in particular. Children seem to receive no special instruction, but the advent of puberty and the period of courting stimulate both sexes artistically,—youths carve presents for maidens and the latter make ornaments for the former. Both men and women, *more suo*, carry on artistic work, but few to a very high degree, the best workers being individuals having the necessary leisure, members of the families of chiefs, etc. The same motives are often used to decorate very different objects, and for a many-sided art there is a seeming poverty of motive. Conventionalization gives play to their fancy. Dr N. thinks that, for various reasons, Dayak art has degenerated here,—the introduction of foreign materials has influenced greatly the art and industries of the women. Bad European models have led to worse native ones.

O'Ferral (W.) Native stories from Santa Cruz and Reef islands. (J. Anthr. Inst., Lond., 1904, XXXIV, 223–233.) English texts of brief tales concerning: Sickness, death, marriage, food, sun and moon, canoe-building, broken food, sun and rain, white folk (spirits), *tapu*, ourselves, an old man and woman, holy stones,—from Santa Cruz; and from Reef islands concerning Lata and Sinota, the volcano Tinakula, a tradition of Nukapu, spirits, the dead, those who die of arrow wounds, a great spirit called Thaumaka, abundance of food. And two longer tales from Reef islands: About a certain woman, and concerning a man who ate human flesh, and a very big pig.

Parkinson (R.) Ein Besuch auf den Admiralitätsinseln. (Ibid., 238.) Brief notes of visit to chief island in December, 1904. To the Moanus (seafarers and fishermen; pile-dwellings) and Usiai (in the interior, agriculturalists), must be added now the Matankor, or Marankol (agriculture, seafaring, fishing, canoe-builders, wood-workers). P. saw the making of the obsidian swords. The Matankor are smaller and lighter than the Moanus and Usiai. The author's party took the first photographs of women on the island.

Riggs (A. S.) The drama of the Filipinos. (J. Amer. Folk-lore, Boston, 1904, XVII, 279–285.) Treats briefly of Filipino plays and poems: Prehistoric (before 1521), religious (from 1521 to present time), Moro-Moro, middle period (1750–1876 and to the present day), seditious or anti-American since 1898. The Moro-Moro plays, reciting the struggles of the Christian against the Mohammedan Filipinos, are interesting and important for the study of native character. A typical Moro-Moro is "Magdapio, or Fidelity Rewarded," by P. A. Paterno; a representative anti-American play is "Hindi Aco Patay (I am not dead)" by Juan M. Cruz. The *official* recognition of the theater in the Philippines did not occur till 1836.

Seidel (H.) Die Bewohner der Tobi-Insel, Deutsch-Westmikronesien. (Globus, Brnschwg., 1905, LXXXVII, 113–117.) Discusses briefly habitat name, physica characters, food (coconut chief item), fire-

making (friction), dwellings and woodworking, textile industries, clothing and ornament, tattooing (no untattooed person can approach holy places), tabu, weapons, canoes, contact with whites, etc. The natives of Tobi are of a lighter color than those of Sonsol, Pul, and Merir.

Senfft (A.) Ueber die Tätowierung der West-Mikronesier. (Ibid., 174–175, 3 fgs.) Brief account of tattooing on the island of Yap, where it was introduced some 100 years ago from the island of Ululsi.

Seurat (L. G.) Sur les anciens habitants de l'île Pitcairn, Pacifique Sud. (L'Anthropologie, Paris, 1904, XV, 369-372, 14 fgs.) Describes petroglyphs and stone axes, etc. Other remains of pre-European inhabitants, — *marae*, human skulls, etc., have been found. Their discovery astonished the mutineers of the *Bounty*.

von den Steinen (K.) Proben einer früheren polynesischen Geheimsprache. (Globus, Brnschwg., 1905, LXXXVII, 119-121.) Describes, with word-list, a secret language, *eo uhiua* ("language concealing the back, *i. e.*, surface"), in use among the Hapaa of Nukuhiva, the principal one of the northern Marquesas islands, now reduced to a few individuals. The chief item is the exchange of consonants (in quadrisyllables the first half only is touched, *Nuku*hiva = *Kunu*hiva). Examples: *eti* (small) becomes *kihi*, *ouoho* (hair) *nouoo*, *Taiohau* (name of a bay) *Hatiohal; meitai* (good) *emiate*, etc. Similar processes have been reported from a tribe of Indian jugglers, Herzegovinian goat-herds, etc., by Krauss and others. Dr von den S. considers that the existence of a similar phenomenon in New Zealand suggests the former existence of a widespread Polynesian secret language. It doubtless had its practical value at festivals, meetings with foreign peoples, etc.

AMERICA

Adam (L.) Grammaire de l'Accawai. (J. de la Soc. des Amér. de Paris, 1905, N. S., II, 43–89.) First part of a grammatical sketch (gender, number, personal pronouns, postpositions and case-indices, verbal adjectives derived from postpositions, demonstratives and pronouns of the third person, nouns of number and collectives, indefinite pronouns and adjectives, interrogatives, augmentatives and diminutives, adverbs, conjunctions), based on texts (Genesis in part, St Matthew, etc.) published by the late Rev. W. H. Brett (missionary) in the Accawai (Acavòiò) a Cariban language of Guiana.

Aimes (H. H. S.) African institutions in America. (J. Amer. Folk-lore, Boston, 1905, XVIII, 16–32.) Treats of the "governor" of the negro communities in New England, elections, parades, etc. These inaugural parades may have antedated those of the whites, — such customs were "a direct survival of practices in Africa; fantastic parades in all parts of Cuba, Sunday reunions and festivals (*cabildos* of each "tribe"); "societies" for dancing, and also for political purposes, in St Lucia (as late as 1844), "kings" and "queens" in Jamaica, etc. The influence of African institutions in the French West Indies was great, and the author seeks to show that in Haiti the government of Toussaint and Christophe was really African in origin — they had a clear insight into the needs and peculiarities of their people. The actions of Soulouque betray also the African character.

Barry (P.) Some traditional songs. (Ibid., 49–59.) Discusses with text and music four traditional songs (The Elfin Knight, The Ram of Darby, The Quaker's Wooing, The Twelve Days of Christmas), contained in Rosa A. Allen's *Family Songs* (Medfield, Mass., 1899). They have been traditional in this family for generations.

Boas (F.) *and* **Wissler** (C.) Statistics of growth. (Rep. U. S. Comm'r Ed., Wash., 1904 [1905], 25–132.) Of this valuable monograph the greater part consists of statistics of anthropometric data obtained in 1891 and 1892 in the public schools, high schools, etc., of Worcester, Mass. The conclusions reached are of profound importance for the proper understanding of the phenomena of child-growth. Dr Boas' earlier assumption of "a symmetrical distribution of variations in period — *i. e.*, of accelerations and retardations — following the laws of chance, giving an adequate explanation of the characteristics of the observed curves of growth," is confirmed. As a result it follows that

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"the developmental stage of a child at a certain period depends primarily on phenomena of retardation and acceleration, which influence the whole body at the same time, so that all measurements should show a tendency to vary in the same direction; either all of them would tend to lag behind the normal average, or all would be in advance of it." This would tend to overturn the rather widespread view that "during a period of energetic physical growth there is a rest of mental development and *vice versa*." The variations of social groups should follow the same laws as those of individuals. A maximum of correlations occurs during the periods of most rapid growth and a sudden drop to negative correlations when growth is nearly completed. The interval 14–15 years in boys forms the dividing line between positive and negative correlations.

Boman (E.) Adan Quiroga. (J. Soc. d. Amér. de Paris, 1905, N. S., II, 139–140.) Brief appreciation of life and works of A. Quiroga (d. at Buenos Aires, Nov. 10, 1904, aged 40), poet, lawyer, politician, criminologist, archeologist, folklorist, and authority on Calchaqui. His most ambitious volume was, perhaps, *La Cruz en America* (1901).

Brady (W. J.) The faces, jaws, and teeth of the Okoboji mound people as indications of their stage of development. (Iowa J. Hist. & Pol., Iowa City, 1905, III, 441–444.) One skull exhibits "an immense bifurcation of the pre-molars, seeming to indicate a low type." In the older (lowest in mound) skulls the teeth approximate closely the modern Caucasian. In the case of the uppermost the bones of the jaw, rather than the teeth, are reduced in size. One shows "intensive white characteristics." The bottommost skulls "represent a type well advanced beyond the present primitive men and the lower early man."

Breysig (K.) Die Entstehung des Staates aus der Geschlechterverfassung bei Tlinkit und Irokesen. (Schmoller's Jahrb., Berlin, 1904, XXVIII, 45-89.) Discusses the origin of the state from conditions found among the Tlingit of Alaska and the Iroquois. With both peoples there is a mixing of divisions according to families and grouping, and according to localities and tribes,— the first, B. thinks, older, the second having arisen from practical needs. The first "state" appears with the coalition of the two primitive families, when a community of life is substituted for a community of blood.

—— Ueber die Entstehung des Gottesgedanken insonderheit bei den amerikanischen Urzeitvölkern. (Z. f. Ethnol., Berlin, 1905, XXXVII, 216-221.) Gives notice of monograph on origin of the idea of God among the American Indians, based on consideration of the N. W. Coast natives, particularly the Tlingit. With the latter the three primitive elements — beginnings of reverence of nature powers, soul and spirit, cult priesthood, sacred legend, — are still separate. B. criticises Brinton's concept of Iroquoian deities. The idea of God is not due to personification of nature forces, but springs from the conception of animal or human personalities.

Broda (R.) A visit to Haiti. (So. Wkmn., Hampton, Va., 1905, XXXIV, 285-290, 4 fgs.) Brief account of visit in December, 1904. Author takes rather optimistic view of situation. In the university and colleges of Port au Prince "the professors are all Haitians, mostly graduates of the University of Paris," and "their scientific works seem to me of high rank." In the list of members of the International Institute of Sociology are three Haitians, Justin Devot, Massillon Coicu, and Firmin Faure, the last once candidate for President of Haiti.

Brown (C. E.) Wisconsin caches. (Rec. of Past, Wash., 1905, IV, 82–95, 10 fgs.) Gives account of caches of stone, metal, and bone implements, etc., in various parts of the state. A cache of 300 stone implements from Dane co. is now in the U. S. National Museum. Mixed caches seem to be uncommon. No uniform method in the making of these caches prevailed. The deposits are sometimes of finished implements and sometimes of pieces suitable for manufacture. Leaf-shaped flints are of such frequent occurrence as to be styled "cache types."

Curtis (W. C.) The basketry of the Caribs. (So. Wkmn., Hampton, Va., 1905, XXXIV, 337–340, 3 fgs.) Based on accounts of Mason and Ober with data and illustrations from Prof. Lloyd, who visited Dominica in 1903. The Carib baskets are said to resemble those of the Louisiana Chetimachans.

De Charency (*Comte*) Le Marquis de Nadaillac. (J. Soc. d. Amér. de Paris, 1905, N. S., II, 133–137.) Sketch of life and scientific activities with list of published works, 1870–1904. His best known volume was *L'Amérique préhistorique*, which was translated into English.

Diguet (L.) Notes d'archéologie Mixteco-Zapotèque: Tumulus et camps retranchés. (Ibid., 109–116, 3 fgs.) Describes briefly the pyramids of the Cerro de Cuta and La Rinconada and the *mogote* (tumulus) of Ejutla, etc., — all funeral monuments, at the same time sepulchers and altars of a cult of the dead. The most imposing are doubtless individual mausoleums. These tumuli and entrenched camps represent one aspect of Mixtec-Zapotec culture.

Du Bois (C. G.) The story of the Chaup: A myth of the Diegueños. (J. Amer. Folk-lore, Boston, 1905, XVII, 217–242.) Gives English text, with snatches of songs in native tongues *passim*, of the legend of Chaup ("the name for shooting star, etc."), who now is said to live in the San Bernardino mountains with his grandmother.

Flom (G. T.) The coming of the Norwegians to Iowa. (Iowa J. Hist. & Pol., Iowa City, 1905, III, 347–383, 2 maps.) Contains data as to origin of immigrant groups, migration, etc. Northeastern Iowa has always been, "educationally and culturally, the center of Norwegian influence in the state."

Förstemann (E.) Die spätesten Inschriften der Mayas. (Globus, Brnschwg., 1905, LXXXVII, 272–273.) F. argues that a certain inscription from Chichen-Itza bears date 1581 and another from Sacchaná that of 1582. They represent perhaps a temporary renaissance of Mayan hopes, due perhaps to the Netherlands revolution.

Froidevaux (H.) Un précurseur de l'Americanisme; le capitaine Champion, 1580. (J. Soc. d. Amér. de Paris, 1905, N. S., II, 163–164.) Note on the statement in the *Calendar of State Papers* (West Indies and America, vol. I, 1574–1660, p. 1–2) that a certain Capt. Champion, of Havre-de-Grâce, had bought from one David Ingram for 100 pieces of silver an "ancient" or war-flag of the Indians of the river May in Florida.

Fuller (Grace P.) The Seri Indians. (So. Wkmn., Hampton, Va., 1905, XXXIV, 271–278, 4 fgs.) Based on McGee. Treats briefly of habitat, physical characters, houses, clothing, food, pottery, implements, balsas, government, marriage, etc. The Seri are one of the lowest tribes of American aborigines.

Heitmüller (*Dr*) Nordamerikanische Pfeilspitzen. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 46.) Brief note on flint arrowheads from near Lafayette. Dr H. distinguishes 3 types.

Hepner (H. E.) The Cora Indians of Mexico. (So. Wkmn., Hampton, Va., 1905, XXXIV, 92–99, 3 fgs.) Treats briefly of physical appearance, houses, religion, legend accounting for rough character of country, occupations and industries, family, fasting and prayer (to "Master of the Mountain"), adoration of stones and rocks (their ancestors), dances, etc. (ceremonial of "mother bowl," prayer to morning star). Nominally Christians, the Cora retain much of their old heathen faith. They have also avoided some of the vices of the whites.

Hewett (E. L.) Government supervision of historic and prehistoric ruins. (Science, N. Y., 1905, n. s., XX, 722–727.) Prints correspondence with Commissioner of General Land Office, Commissioner of Indian Affairs, and Chief of the Bureau of American Ethnology concerning the preservation of ruins. Professor H. approves the bill of Commissioner Richards of the Land Office.

—— The last survivor of the extinct pueblo of Pecos. (Rec. of Past, Wash., 1905, IV, 54–57, 1 fg.) Condensed by the author from the *American Anthropologist*, 1904.

Hill-Tout (C.) Ethnological report on the Stsee'lis and Sk·aúlits tribes of the Halōkme'lem division of the Salish of British Columbia. (J. Anthr. Inst., Lond., 1904, XXXIV, 311–376.) Treats of tribal history, sociology; marriage, puberty; mortuary, birth, and naming customs; food-tabus and restrictions, *suliaism*, hereditary totems, dances, religious ideas, shamanism, dwellings, household utensils, dress, cardinal points, winds, the year, linguistics (numerals, personal pronouns), myths and traditions

(pages 336–362; English texts of eight tales, native text with interlinear and free translation of one for the Stseë'lis; and, for the Sk·aúlits, tribal history and legends, native texts, interlinear and free English renderings of four legends — also Salish Pater Noster from Mengarini and modern Sk·aúlits version). T. considers it not improbable that the Stseë'lis are "a somewhat modified remnant of the race that occupied these regions prior to the advent of the Salish." Only one of the five old camping-sites is now used by them. Although Catholic converts, "there is a very general hankering after the old condition of things." Youth are no longer trained in the ancient way and have deteriorated. Each Salish tribe seems to have had its own puberty customs. T. believes that "no doubt can any longer exist that the Salish tribes in former days had not only personal *súlia*, or totems, but also hereditary group-totems as well. The Sk·aúlits are reduced to a scattered village of a dozen houses — a few generations ago they numbered two or three hundred souls.

von Ihering (H. E. R.) Bibliographia 1902–1904: Historia Natural e Anthropologia do Brazil. (R. do Mus. Paul., S. Paulo, 1904, VI, 584–659.) Section D, pp. 607–615, relates to anthropology, — 10 titles, embracing works by Borbosa Rodrigues, A. B. Meyer, Theodor Koch, J. B. Steere, P. F. Vogt, Paul Ehrenreich, M. Schmidt.

—— Archeologia comparativa do Brazil. (Ibid., 519–583, 4 pl.) Treats of archeology of Rio Grande do Sul and craniology of its primitive inhabitants, the *sambaquis* of southern Brazil, the extra-sambaquian culture of the State of S. Paulo, archeology of Bahia, archeology of the Amazonian region, the archeological provinces of Brazil and their relations with the neighboring regions (provinces: sambaquian south Brazilian, Bahian, Amazonian), data from early writings, etc. Bibliography of 53 titles. Von I. concludes that the Amazonian region of Brazil has been considerably affected by the Andean civilizations, but not the center or the south. Both the extra-Amazonian parts of Brazil and the eastern sections of Argentina possessed in prehistoric time no higher culture than that of the modern natives. A great part of the archeological objects from southern Brazil are to be attributed to the Calchaqui culture, non-indigenous to that region. On the coast the dolichocephalic (Botocudo) and the brachycephalic (Guarani?) types, are represented, in prehistoric times, in the sambaquis.

Jacob (C.) Contribution à l'étude de la morphologie des cerveaux des Indiens, etc. (Rev. d. Mus. de La Plata, 1904, XII, extr., pp. 15, 7 pl.) Describes and figures brains of 4 Indians (2 Fuegians, 2 Araucanians), the anthropometric data concerning whom had been given by ten Kate (q. v.). Dr J. concludes that all four brains are up to the level of development of the average European brain. The Yahgan brain is rich in convolutions and that of the Alakaluf woman rich in secondary convolutions. In these Indian brains the parietal and temporal lobes are typically developed, while the frontal and occipital vary as with Europeans. No distinctly pathological anomalies occur.

de Jonghe (É.) Histoyre du Mechique. Manuscrit français inédit du XVI^e^ siècle. (J. de la Soc. des Amér. de Paris, 1905, N. S., II, 1–41.) Publishes for the first time a French MS. of the sixteenth century, treating of the origins of the three chief tribes, the Mexican calendar, various cosmogonic myths and legends, the life of the culture-hero Quetzalcoatl, etc. An index of Nahuatl terms is added. The Spanish original of the MS. de J. identifies with the lost *Antiguedades Mexicanas* of the Franciscan de Olmos, mentioned by Mendieta The translator was André Thevet, whose signature the French MS. bears. This is a very valuable discovery.

—— "Amerikanistenklub" de Berlin. (Ibid., 168–171.) Résumés the proceedings of the February, 1904, meeting of the Berlin Americanist Club, at which papers were read by Dr Lehmann on the history of the Mexican codices and Hr Uhle on botanical explorations in South America.

ten Kate (H.) Matériaux pour servir à l'anthropologie des Indiens de la République Argentine. (Rev. d. Mus. de la Plata, 1904, XII, repr. pp. 27, 9 pl.) Gives psychological notes, anthropometric (post-mortem) data, osteological observations and notes on the brains of four Indians (Yahgan man, a Huilliche chief and a woman of the same tribe, an old Alakaluf woman), three of whom

were government prisoners. Also anthropometric measurements (living) and observations on three Araucans, three Tehuelches, and four Chiriguanos. The results of an autopsy of the Yahgan are likewise given. The two Fuegians were mesocephalic, the two Araucans brachycephalic. Of the ten living Indians four were mesocephalic, the rest brachycephalic, the Tehuelches being very round-headed. The condition of the brains examined was such as to permit only certain details of observation. The brain-weights of the two males were average or ordinary, that of the woman small (see: Jakob). The author notes "the Japanese aspect of young Araucan children," while two of the Tehuelches "recalled, by their general aspect, certain fine types of the North American Indian (Yaqui, Pima)."

Koch (Th.) Forschungsreise in Brasilien. (Globus, Brnschwg., 1905, LXXXVII, 281–283.) Notes on journeys, July–December, 1904, in the Caiary-Maupés region of Brazil, among the Kobéua (possessing mask-dances, etc.), Umáua, ill-treated by the whites, but taking vengeance; Tucano, Tariána, Pira-tapuyo, Uanána, Baniwa, Maku, etc. Dr K. obtained numerous vocabularies, photographs, ethnologic specimens, including some 100 dance-masks of the Kobéua, and some stone axes of curious form looked on as reliques. The language of the Umáua is "a pure Cariban dialect."

Latcham (R. E.) Notes on some ancient Chilean skulls and other remains. (J. Anthr. Inst., Lond., 1904, XXXIV, 234–254, 2 pl.) Describes, with detailed measurements, 4 male and one female skull (all subdolichocephalic) found at an average depth of 4 ft. 9 in., in a quarry near Coquimbo. The evidence indicates submersion and upheaval subsequent to burial, and the ground "has not been disturbed for hundreds, perhaps for thousands of years." One male skull (subdolichocephalic) was from one of a number of shell-mounds about Coquimbo bay. With the female skeleton were found buried two mullers, a flat mortar-stone, and a flat stone amulet. With the others flint implements, some fragments of coarse pottery, etc., were found. The general type of these skulls "is quite distinct (even to a casual observer) from that of any other Chilean race which I have examined, including that of the natives of the time of the Spanish Conquest." Several points of resemblance to Fuegian and Eskimo skulls are noted, which, L. considers, are racially cognate. L. adds a note by Dr Flores describing three ancient skulls from the island of Mocha, representing a mixture of the ancient race with the later Araucans.

Lehmann-Nitsche (R.) Gefälschte ethnologische Gegenstände in Buenos Aires. (Sonntags-Ztg., Buenos Aires, 1905, Heft 18, S.-A., p. 1, 1 fg.) Brief account of spurious Indian objects (stone and bone axes, wooden statuettes with real but not Indian hair, etc.) manufactured by a certain M. Goireau of Lomas de Zamorra. Some fantastic pieces have been disposed of by him.

—— El Congreso de Americanistas XIV Sesion — Stuttgart, 1904. Informe del Delegado de la Faculdad de Filosofia y Letras de la Universidad de Buenos Aires. (Rev. de la Univ., Buenos Aires, 1905, III, repr., pp. 52.) Report of Dr Lehmann-Nitsche as delegate to Stuttgart Congress of Americanists. Contains very good résumés of over 40 papers and addresses, some quite extensive, particularly those of Fraas, Jochelson, Hans Meyer, Plagemann, Kapff, Jonkheer van Panhuys.

Lejeal (L.) Emanuel Domenech. (J. Soc. d. Amér. de Paris, 1905, N. S., II, 131–132.) Note on the Abbé Domenech, whose recent death at Lyons, where he had lived long in retirement, recalls his *Livre des Sauvages* (1860), once much discussed and by many looked on as apocryphal. L. thinks critics have been too severe.

Marcel (G.) Gabriel Gravier. (Ibid., 137–138.) Brief sketch of G. Grabier, geographer of Rouen (d. aged 78), an authority of eminence on Norse and other early voyages to America.

McLane (A. C.) Anthropology at Harvard. (Iowa J. Hist. and Pol., Iowa City, 1905, III, 445–453.) Treats of the Peabody Museum and its collections, the propagators of anthropology at Harvard, anthropology in the curriculum, interest of students, instructors and courses, etc. The department is growing fast.

Mead (F. H.) The Peabody Museum of Harvard University. (Rec. of Past, Wash., 1905, IV, 68–79, 14 fgs.) Gives account of origin, arrangement, charac-

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ter of exhibits (N. American Indian, Swiss lake dwellings, S. America, C. America and Mexico, Pacific islands, Japan, etc.). There are also an extensive osteological collection and a library of 3,000 volumes, besides 3,000 pamphlets. The Museum has its special publications. The civilizations of ancient America are particularly well represented, also the native tribes of California, Arizona, and prehistoric man of Delaware valley.

Meeting (The) of the Archeological Institute of America. (Ibid., 27–31, 1 fg.) Gives abstracts of papers by Messrs Norton, Eliot, Paton, Ward, Lummis, and Lythgoe.

Merriam (C. H.) Distribution of Indian tribes in the southern Sierra and adjacent parts of the San Joaquin valley, California. (Science, N. Y., 1904, N. S., XIX, 912–917.) According to Dr M., "in the Sierra the distribution of tribes conforms closely with certain faunal belts," and generally the "distribution of the Indians conforms closely with that of the faunal and floral areas." In California no Indians live in the boreal zones, and few, if any, in the upper half of the transition zone. The great majority live in a single life zone (the upper Sonoran), many in the lower Sonoran, and a few in the transition. The author lists 9 Yokuts and 7 Paiute tribes, with their locations, the former belonging to the hot valley and adjacent foot hills, the latter to the cooler ponderosa-pine belt of the mountains.

Monoyer (E.) Les Indiens Guatos de Matto-Grosso. (J. Soc. d. Amér. de Paris, 1905, N. S., II, 155–158.) Notes on physical characters (stature of men 1.65–1.75, women 1.55–1.70 meters), family (children 6–8, mixed breeds favor Guato), temperament (gentle, idle), fishing (shooting *pacu*), dwellings, clothing, music, dances (*courourou* and *siriri*), alcoholism, etc., obtained in 1900–1902. The Guatos are nominally Christians. Physically they are among the finest in South America.

Pepper (G. H.) An unusual Navaho medicine ceremony. (So. Wkmn., Hampton, Va., 1905, XXXIV, 228–235.) Brief account of the ceremony with sand-painting for cure of sore throat, said by medicine-man to be caused by nightly visits of eagle.

Preuss (K. Th.) Der Kampf der Sonne mit den Sternen in Mexiko. (Globus, Brnschwg., 1905, LXXXXII, 136–146, 6 fgs.) Discusses the ancient Mexican idea that the sun fights with the stars and the conquered are offered up in sacrifice. The stars were daily killed by the sun, sacrificed, fell down into the underworld, and rose again the next day. The identity of this process with the sacrificial death which the gods had to suffer to renew themselves and increase their power, there were transposed to the heavens. There was a complete parallel between the mundane and the celestial processes. The relations of festivals, etc., to this basal idea are discussed.

Rieck (*Dr*) Reisebilder aus Patagonien und von der chilenischen Küste. (Corr.-Bl. d. Deutschen Ges. f. Anthrop., München, 1904, XXXV, 46.) Contains some notes on the Fuegian Pesherai.

Sapper (K.) Der Charakter der mittelamerikanischen Indianer. (Globus, Brnschwg., 1905, LXXXVII, 128–131.) Among the chief characteristics of the Central American Indians are: Stolidity and emotional control, noticeably in children, and more the result of adult example than family education. Moderation (but great tribal differences,— the Mayas are quick and more excitable than the Kekchi) in movement, language, gesture of the face, etc., but energy and intellectual qualities are, nevertheless well developed. Exceptionally (at festivals, etc.) they run riot for a time. Woman has an important rôle. Their childlikeness tempers their hate and vengeance. Begging was met with only among the Guatusos, to whom the missionaries once gave presents of clothing, etc. The Indian woman is very industrious; the man, too, accomplishes much, and has also persistence. In twelve years the author had nothing stolen by Indians. The southern Indians lie more barefacedly than the northern, but the lying of the aborigines has been exaggerated. European culture must not be rammed down the throat of an Indian.

Seler (E.) Mischformen mexikanischer Gottheiten. (Ibid., 110–112, 8 fgs.) Describes briefly mixed-forms of Mexican deities, due to a sort of reaction against the systematization of the priestly school of the *tonalamatl* period,— different qualities are united in the same person. The deities discussed are Tepeyollotli, Xipe, Quetzalcoatl.

Smith (A. G.) Okoboji Indian skull measurements. (Iowa J. Hist. & Pol., Iowa City, 1905, III, 435–441, 4 pl.) Gives chief measurements of 5 (others fragmentary) skulls from Okoboji mound. Three were dolichocephalic, two brachycephalic.

Smith (Harlan I.) An archeological expedition to the Columbia valley. (Rec. of Past, Wash., 1905, IV, 119-127, 9 fgs.) Describes human figure made from antler, found in child's grave at Tampico, and other objects. Article is partly résuméd from *American Museum Journal* for January, 1904, and *Science* for April 8, 1904.

Tooker (W. W.) Meaning of some Indian names in Virginia. (William and Mary Coll. Quart., Williamsburg, Va., 1905, XIV, 62–64.) Discusses etymology of Arrohetac, Cantaunkack, Capahowasick, Kecoughtan, Kiskiack, Nansamund, Paspahegh.

Vogt (Fr.) Yerba- und Holzgewinnung im Misiones-Territorium. (Globus, Brnschwg., 1905, LXXXVII, 248–254.) Describes *mate*-cultivation and lumbering in the Misiones territory of Argentina. Contains notes on the history of "Paraguay tea," now the "national drink" of the majority of the natives on the LaPlata.

Waldeyer (W.) Ueber meinen Aufenthalt in St. Louis und die Anthropologische Abteilung der Weltausstellung daselbst. (Zeit. f. Ethnol., Berlin, 1905, XXXVII, 213–216.) Notes on trip to Mexico, etc. W. doubts the unity of the Indian stock of N. America, and considers the aborigines of u t imate Mongolian origin.

Ward (D. J. H.) Second yearly meeting of the Iowa Anthropological Association. (Iowa J. Hist. and Pol., Iowa City, 1905, III, 422–458.) Account of proceedings and condensed report of papers by Starr, Ward, Smith, Brady, McLane, Veblen, Pratt (see these names).

—— The investigation of the Okoboji mounds and the finds. (Ibid., 427–435.) Describes excavations made in November, 1904, objects found, etc., chiefly human bones representing more than 30 individuals, though possibly 100 altogether had been buried in the mounds. Some of the uppermost finds (beads, iron, etc.) indicate contact with whites. Evidences of perhaps six different orders of burials occur. The lowest was a bone burial; those in the top were interred sitting.

Wintemberg (W. J.) French Canadian folk-tales. (J. Amer. Folk-lore, Boston, 1904, XVII, 265–267.) English texts of three brief tales: Transformation with animals, the evil eye, Jack with his lantern.

Wright (G. F.) The physical conditions in North America during man's early occupancy. (Rec. of Past, Wash., 1905, IV, 15–26, 4 fgs., 6 maps.) Treats of the Trenton gravel data, Canadian boulders in Missouri, "Lansing man," etc. Author considers that "when we speak of glacial man in America, we do not necessarily imply an antiquity any greater than that which is now assigned to his more civilized brethren in Egypt and Babylonia."

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ANTHROPOLOGIC MISCELLANEA

Recent Work of the Wisconsin Archeological Society. — The bill to promote the work of the Wisconsin Archeological Society, introduced in the Wisconsin legislature early in February last and previously mentioned in these pages (*American Anthropologist*, vol. 7, 1905, p. 170), received the unanimous support of that body and became a law by approval of the Governor on June 10. This enactment, which is the first that has ever been made in the interest of Wisconsin archeology, provides for the printing, at the expense of the State, of 1,500 copies of the bimonthly Transactions of the Wisconsin Archeological Society in pamphlet form, not to exceed 75 pages per number, with the necessary illustrations. Of this edition several hundred copies will be presented to the Wisconsin Free Library Commission for distribution among its traveling libraries. These Transactions will supersede the Bulletin that has been published quarterly by the Society under the editorship of Mr Charles E. Brown. One of the first numbers of the Transactions that will be published under the new law will consist of a monograph on the Aboriginal Pipes of Wisconsin, by the president of the Society, Mr George A. West, who has devoted many years to a study of the subject and the collection of material relating thereto. This noteworthy collection, comprising many hundreds of specimens, representing every period and type from the primitive pebble and tube pipes to the clay, lead, and iron pipes of early historic times, will eventually be presented to some worthy institution. It is also proposed to publish catalogues of archeologic collections from Wisconsin, and to this end a beginning has been made toward listing all collections of the sort now deposited in large museums outside the State. This is a laudable enterprise, as it will make available to students of Wisconsin archeology all scattered material pertaining to the subject.

Research work under the auspices of the Society is being conducted in many parts of the State by a larger number of trained students than ever before. Mr Charles E. Brown, secretary and curator, now devotes his entire energy to the work of the Society. During the present season Mr Brown will conduct a small party in the field with the view of completing the location and survey of the aboriginal monuments and eventually of effecting their preservation, and for the purpose of obtaining notes, photographs, maps, and artifacts. Headquarters for the Society have been

opened at Milwaukee, where a bureau of records is established and whence members throughout the State will be directed in their researches. The State Board of Agriculture has become interested in the Society's endeavors, and is furthering its plans for lectures and the exhibition of collections, photographs, charts, maps, and models of the archeologic features of various sections of Wisconsin, at the forthcoming State Fair at West Allis, where, it is hoped, interest in the work will be greatly increased, particularly as a group of mounds, preserved through the efforts of the Society, is situated within the limits of the fair grounds, forming an object lesson in the preservation of local antiquities.

One of the purposes of the Society, in which it has been especially successful, has been to induce the owners of fugitive specimens, as well as of large collections, to present them to or to place them on deposit in some local museum or educational institution; and in some instances the Society has purchased collections for this purpose. No effort has yet been made to concentrate the collections of Wisconsin in a great central museum, so that while journeys of considerable length are necessary in order to examine representative collections of Wisconsin artifacts, the plan has the advantage of arousing local interest in archeology in many communities, and ultimately will stimulate effort in many directions toward advancing the Society's project for the preservation of antiquities.

The growing interest in archeology is manifest throughout Wisconsin. For several years a course in American history and archeology has been given by Dr George L. Collie, of Beloit College, to which Mr Frank A. Logan, of Chicago, generously presented the Rust collection at the close of the Columbian Exposition in 1893, and to which he has recently added the W. H. Elkey collection of 6,000 stone and copper implements. The Oshkosh Public Library, through the efforts of the Wisconsin Society, has become one of the repositories of Wisconsin archeological material, and in addition has recently received the James G. Pickett collection, from the Lake Winnebago region, through the liberality of Mrs Leander Choate. The Kellogg Library at Greenbay is another repository, having recently received on deposit the collection of J. P. Schumacher, a member of the Wisconsin Society. These objects were gathered from the vicinity of Greenbay. The collection of the late I. A. Lapham, well known through his researches in Wisconsin archeology and history, and the J. A. Rice collection of Mexican antiquities, will shortly be presented by the Wisconsion Archeological Society to the Milwaukee-Downer College. It is thus seen that the Society's efforts in placing private collections where they will be accessible to students and open to view by every one, have met with gratifying success.

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A project is afoot to prevent the counterfeiting of Wisconsin specimens and to prohibit artifacts from being taken from the State for commercial purposes. In this endeavor every one will wish the Society success, since its officers assure us that the plans will not hinder the acquirement of Wisconsin collections by the great museums of the country or of the world, recognizing the fact that archeology cannot be limited by political boundaries nor the interests of science advanced by illiberality. As the work of the Archeological Society develops, and the collections within the State become better known and catalogued, it will be found, no doubt, that the collections of even the great museums of the country may be greatly enriched by exchange for the Society's duplicates. HARLAN I. SMITH.

Explorations at Cavetown, Maryland. — In May, 1905, explorations were carried on by Phillips Academy of Andover, Mass., at Cavetown, Washington county, Maryland, in a cave controlled by Mr G. M. Bushey. His son, Mr F. E. Bushey, was much interested in the spot, and it was largely through his representations that the work was attempted. Previous excavations had been made by Mr Joseph D. McGuire, of Washington, and by others. The cave is in a limestone formation to the west of the Blue Ridge mountains, itself facing east from a ridge running parallel to the main ridge of the mountains. The opening, resembling that of an ordinary rock shelter, is about 21 meters wide and leads to a chamber of which the front part is about 16 meters deep. In this most of the explorations were carried on. Farther under the hill the cave runs westward for about two hundred meters, ending in a small pool. Pits were sunk and trenches dug in the hope of finding traces of early man, but nothing suggestive of great age was found. Stone and bone implements in moderate profusion existed, also numerous animal bones. Along the north wall of the chamber, as well as elsewhere, stalagmitic formations containing a sort of charcoal-bone breccia were discovered and specimens taken. At the back of the chamber a hard stalagmitic floor had formed, and under this was a deposit of red cave earth. In this were no traces of man's occupancy, but in a similar deposit in a quarry outside the cave were found many fossilized animal bones; the identification of these will determine the paleontological character of the red-earth stratum, in which, if anywhere, future excavations are likely to lead to the discovery of traces of the early "cave man" of European reputation. The research was greatly aided by the work and advice of Prof. William H. Holmes of the Bureau of American Ethnology, and of

Mr McGuire whose previous work made his coöperation, freely extended, almost a necessity. The results of the work, which will be embodied in a bulletin of the Department of Archeology of Phillips Academy, was in charge of Mr W. K. Moorehead and the writer.

CHARLES PEABODY.

Preservation of Antiquities.—More people have visited the prehistoric ruins of the Southwest during the present season than during any five previous years. This points to a marked revival of interest in American archeology, and to the necessity for an unremitting campaign for the preservation of our antiquities. Had it not been for the activity of the General Land Office, the Office of Indian Affairs, and the Bureau of Forestry during last year, there would have been an increased amount of vandalism among the ruins. Happily the policy of the Government with reference to these matters has become fairly well known and is generally respected. Almost no collections of prehistoric material are now exposed for sale in New Mexico; but so much cannot be said for Arizona.

As the spoliation of ruins upon the public domain becomes more and more restricted by governmental authority, it becomes apparent that the presence of extensive ruins on lands open to settlement add much to their desirability as homesteads, since these antiquities may be made a source of revenue.* Accordingly homesteads are sometimes located with a view solely to the acquisition of valuable ruins, with no intention of improvement and with no possibility of agriculture. Nothing but the most liberal interpretation of our homestead laws can construe such an entry as anything but fraudulent. No obstacles should be thrown in the way of bona-fide settlers who homestead the lands of the Southwest "for the purpose of actual settlement and improvement," but the gift of the lands alone is all that is contemplated and this is offered under the assumption that the settler will assist in the development of the country. It is negligence inexcusable if we continue to allow these priceless ruins to pass to individual ownership, or to give them away to be destroyed outright or excavated by unscientific methods and their contents scattered and lost. Some method should be devised whereby ruins situated on unappropriated public lands would never be alienated and at the same time no desirable agricultural land be withheld from entry. The Commissioner of the General Land Office should be empowered to withhold from any homestead entry small parcels of land on which antiquities are situated which in his judgment are of sufficient importance to warrant preservation. At present there is no law permitting him to do this. Congress must be looked to for such authority.

Gran Quivira. — A conspicuous example of the alienation of important archeological sites through the operation of the homestead laws is that of Tabira, popularly known as "Gran Quivira," in eastern Socorro county, New Mexico. A homestead entry was filed some years ago on the quarter-section of land upon which are situated the ruins of this pueblo. This was the most extensive of the Piro settlements and is the best preserved of all the Piro ruins. Its situation on the eastern frontier of the Pueblo region renders it of unusual importance. No collections of any importance have been made from the ruins of that region. After a long contest this homestead has recently been declared valid and a patent issued to the claimant.

Pajarito Park.—By executive order of July 29, 1905, an additional reservation of about 33,000 acres has been given to the Santa Clara Indians. This extension embraces all of the great Puye or Santa Clara group of cliff-dwellings, the principal center of interest in the proposed Pajarito National Park. There can be no question as to the justice of this extension. It is merely giving the Indians a part of what already belonged to them by virtue of the grant of 90,000 acres by the crown of Spain to the Santa Clara pueblo in 1727, which was confirmed by Governor General Cachupin in his decree of 1763. The restitution of even a part of this land to the Indians must be commended. It is to be regretted, however, that the Indians were not offered in lieu of the few sections containing the most important ruins, other lands equally valuable for timber and grazing, and this great group of prehistoric ruins, which many travelers have asserted would be the most attractive of all our national parks, held by the Government for the benefit of the public. As it is, the national park proposition will probably be abandoned. The Indian Office will provide for the preservation of the ruins. Fortunately the other groups of ruins of the Pajarito plateau are brought within the recently proclaimed Jemez Forest Reserve, so that their protection and preservation are assured.

EDGAR L. HEWETT.

Supposed Shoshoneans in Lower California. — The peninsula of Lower California has been regarded by some to have been held in its entirety, and by everyone over at least its whole northern half, by Indians forming part of the Yuman linguistic stock. In 1902 appeared Dr N. León's map of the Linguistic Families of Mexico in the publications of the National Museum of Mexico, in which a small area on Todos Santos bay in Lower California, a short distance south of the international boundary, is represented as belonging to the Shoshonean stock.

This area on the map is apparently intended to designate the general location of a Shoshonean group rather than to define its exact geographical limits. In the same year the same author published in the Annals of the Museo Nacional of Mexico (VII, 263), an article under the title "Los Comanches y el dialecto Cahuillo de la Baja California." The second part of this contribution consists of a Cahuilla vocabulary communicated to the author in manuscript by A. Peñafiel. It is stated that according to the census of 1895 there were 558 "Cahuillos" in "Ensenada and Todos Santos." The Peñafiel vocabulary is compared by Dr León with a Cahuilla vocabulary from Latham's Comparative Philology, originally from Whipple, and it is found that "great and radical differences between them become apparent, to such a degree that they appear to be of diverse origin. There seems to be a marked Nahua influence in the one from Lower California."

The reason for this difference is easily discovered. Latham's vocabulary, like those of Loew, Boas, and others, which are all from within the United States, is Cahuilla, that is, Shoshonean; the Peñafiel "Cahuillo" vocabulary from Lower California, however, is Yuman. This is not only certain, but in entire accord with the unvarying statements of travelers and investigators to the effect that the Indians of the northernmost part of Lower California are closely related to the Diegueño of southernmost Upper California, and therefore Yuman. It is accordingly apparent that the term Cahuilla, also written Coahuilla, Kawia, Kauvuya, etc., which has ordinarily and properly been used of the Shoshonean Indians who inhabit the region between the San Jacinto and San Bernardino ranges in southern California and who are most nearly related in dialect to the Agua Caliente, Luiseño, and San Juan Capistrano Indians of the coast region to the west of themselves, has somehow also come to be a designation, how commonly is not known, of the northermost Yuman Indians of Lower California.

In 1903 Mr C. H. Marks Jr accompanied a biological expedition of the California Academy of Sciences from San Francisco to the Revillagigedo islands. During a one day's stay of the expedition at Ensenada, the settlement on Todos Santos bay, Mr Marks met and overcame various difficulties that arose and succeeded in obtaining and verifying a vocabulary of the Indians of the region. This vocabulary completely corroborates the "Cahuillo" one of Dr León in being Yuman, as appears from the following selected words:

One, *cin;* two, *uwá;* three, *umóx;* four, *cipáp;* five, *särä'p;* eye, *yiu;* nose, *hu;* ear, *cimä'tl;* tongue, *nipä'tl;* mouth, *ax;* fire, *ahaúu;* wood, *ī;* earth *mût;* rock, *wix;* water, *xa;* drink, *si.*

It is accordingly plain that the supposed Shoshonean territory in northern Lower California does not exist, and that all the northern half of the peninsula was, as has heretofore been believed, an unbroken area of Yuman territory. A. L. KROEBER.

Ponce de León and the "Fountain of Youth." — On reading in the last number of the *Anthropologist* (pp. 368 A, B) an abstract of Mr James Mooney's paper on the "Ethnography of Florida," I am reminded of the fact that, some years ago, while making some historical and philological investigations, it became of interest to me to know the meaning of the word *bimini*, which the Spaniards of *Boriken* (Porto Rico), Juan Poncé de León among the number, understood from the Arawaks to be the name of an island which lay far out at sea to the northwest; which was extremely rich in gold; and on which there existed a spring of which the water possessed the miraculous property of renewing the youth and restoring the vigor of any aged person who drank of it or bathed in it. It was with the object in view of discovering, subjugating, exploring, and settling this island of Bimini, and of taking advantage of the restorative power of its marvelous spring, that Ponce, enervated by the "strenuous" life that he had led, set sail from the port of San German, March 3, 1513, on an expedition in which, although he failed to find Bimini, he discovered what he supposed to be an island, to which he applied the name of Florida.

It appears from history that the existence of a vigor-restoring spring on some far-away island of uncertain location had long been a tradition current among the Arawaks, and that some of these Indians had, as Mr Mooney states, reached the mainland in their efforts to find it, long anterior to the time of Ponce. Failing, in my researches, to ascertain that any explanation of the meaning of the name of this mythic island had ever been given, I finally consulted an Arawak vocabulary in von Martius' *Beiträge zur Ethnographie . . . Amerikas* (II, p. 319), and, from the elements of the word which I found therein (*bi*, 'life'; *mini*, 'fountain,' 'spring,' 'source'), discovered its signification to be 'fountain of life.' According to the metaphorical system of nomenclature in vogue among both the Arawaks and Caribs, the name of the spring may have been applied to the supposed island on which it was believed to exist. Bimini is now the name of a group of small islands lying at the northwest extremity of the Grand Bahama Bank and east of the Gulf stream. A large island named "Illa de Beimeni parte" appears on a map in Peter Martyr's Decades, published in 1511.

The phrase, "Fountain of Youth," with which we are so familiar in connection with the name of Ponce de León and his discovery of Florida, is doubtless a translation of the phrase used by old Spanish writers, and this again may originally have been a free translation of the Arawak word, although I have met with no statement by the Spanish historians that would seem to give countenance to such a supposition.

W. R. GERARD.

Recent Folk-lore Meetings in California. — The first regular meeting of the Berkeley Folk-Lore Club, founded May 3, 1905, was held in the evening of August 18 at the University of California. The committee appointed to draft an organization reported as follows:

The committee appointed May 3, 1905, by unanimous vote of the charter members of the Berkeley Folk-Lore Club to report on a scheme of organization for the Club, beg leave to submit the following:

Constitution of the Berkeley Folk-Lore Club

1. This Society shall be called the Berkeley Folk-Lore Club.

2. Besides the fifteen charter members, to wit: Messrs Lange, Mitchell, Goddard, Dresslar, Hart, Setchell, Merriam, Richardson, Fryer, Gayley, Miller, Ritter, Keeler, Noyes, and Kroeber, members shall consist of such men members of the Academic Senate of the University of California, and such men members in good standing of the American Folk-Lore Society, as are unanimously elected by the Club; and of such only.

3. The officers shall be a President, Vice-president, and Secretary, who shall constitute an Executive Committee which shall arrange for all meetings and transact all business of the Club.

4. Four or more meetings annually shall be held, at the first of which in each academic year the officers shall be elected.

5. Five shall constitute a quorum for the transaction of business.

6. Amendments to this constitution may be proposed at any meeting of the Club and adopted by a two-thirds vote of those present at the next meeting.

The Committee recommend the adoption of this constitution and the immediate organization of the Club under its provisions.

Signed: A. L. KROEBER, CHARLES KEELER, G. R. NOYES

The report of the Committee was discussed and accepted, the proposed constitution being thereby adopted.

The following officers were then elected: President, A. F. Lange; Vice-president, Charles Keeler; Secretary, A. L. Kroeber. New mem-

bers elected were: Prof F. W. Putnam, Dr B. P. Kurtz, and Prof H. K. Schilling.

The Committee on the establishment of a California Branch of the American Folk-Lore Society reported as follows:

The committee appointed May 3d, 1905, on vote of the charter members of the Berkeley Folk-Lore Club to report on the feasibility of the establishment of a California Branch of the American Folk-Lore Society, beg leave to submit the following recommendations:

That the formation of the Berkeley Folk-Lore Club provides an opportune basis for the establishment and successful development of a California Branch of the American Folk-Lore Society, which will extend the work undertaken by the Berkeley Folk-Lore Club to a wider sphere of influence and bring it before a larger body of persons, thus enhancing the promotion of folk-lore interests on the Pacific Coast. Be it resolved therefore,

That a California Branch of the American Folk-Lore Society be hereby organized by such of those present as signify their willingness; and

That a committee of five be appointed to arrange for a meeting, including a program, in Berkeley, on the evening of August 28; said committee to submit at this meeting a formal draft of organization, with nominations for officers, for the California Branch of the American Folk-Lore Society.

Signed: A. L. KROEBER, CHARLES KEELER, G. R. NOYES

This report was adopted, and the following committee appointed under its provisions to report at the first meeting of the California Branch on August 28: J. C. Merriam, G. R. Noyes, A. L. Kroeber, W. C. Mitchell, and Charles Keeler.

The work of the California Branch of the American Folk-Lore Society is designed to be directed to the study of the many elements of folk-lore existing in California among its Indian, Spanish, American, and Asiatic populations, and to the awakening of interest in such studies, by the institution of public lectures, meetings devoted to discussions and comparisons, systematic researches leading to the publication of new information, and the ultimate formation of branch or affiliated societies in various parts of the Pacific Coast. The work that is thus planned is connected so intimately with the history of California, and will be so illustrative in a wider sense of the development of the state, that the furtherance of this work should be of general interest.

The first regular meeting of the California Branch was held August 28 in the Philosophy Building, at the University of California, Berkeley. Dr C. Hart Merriam of Washington City gave the address of the even-

ing on "Aboriginal Folk-lore from California." Prof F. W. Putnam, president of the Boston Branch, Dr Roland B. Dixon, president of the Cambridge Branch, Dr Charles Peabody of Cambridge, and Professors J. C. Merriam and W. E. Ritter of the University of California spoke on the aims and possibilities of the Branch and the development of folk-lore studies in California. A second meeting was held in Berkeley August 31 in conjunction with the American Anthropological Association.

At present meetings will be held chiefly in Berkeley and San Francisco, but it is hoped that before long it will be possible to meet also in other cities in California and adjoining states.

Muskwaki Indians of Iowa. — Dr Duren J. H. Ward of Iowa City has recently spent eight weeks in the study of the Muskwaki, or Fox, Indians near Tama, Iowa, in the interest of the State Historical Society. These and the Sauk, or Sauki, Indians have been so long and intimately associated that their separate tribal identity has been lost for generations. While their dealings with the Government have nearly always been as Sauk and Foxes, yet most of these 350 Indians in Iowa are said to regard themselves as Muskwaki. With the exception of half a dozen Winnebago these people are descendants of those who in 1846 were forced to move to Kansas after ceding to the United States all their lands west of the Mississippi in 1842; but small bands wandered back to their old home, and on petition of five hundred citizens, between 1852 and 1854, were permitted to remain. About the winter of 1856–57 the band that had settled at Tama purchased eighty acres of land for $1,000, and from that date to 1886 the tract had increased by purchase to about 1,500 acres, the Indian title to which was confirmed by act of Congress of October 1, 1886; and by 1899 additional purchases increased their holdings to about 3,000 acres, at a total cost of $85,635. To the section occupied by these Indians Dr Ward suggests that the name "Musquakia" be applied. What may be regarded as the most interesting discovery made by Dr Ward is a fragmentary history of the tribe, written by Chakatakase. With the understanding that it shall not be translated, the manuscript has been transferred to the State Historical Society for publication in the Muskwaki language, the Indians to receive three hundred copies of the printed work, which will make about fifty pages. A model of a Muskwaki house, 36 by 28 by 22 inches in size, has been deposited among the collections of the Historical Society.

Inlaid Objects: A Correction.— In an article on "Ceremonial Objects and Ornaments from Pueblo Bonito," published in the last number

of the *American Anthropologist*, Mr George H. Pepper thus misquotes (p. 197) my account of the mosaic frog from Chaves Pass, Arizona: "As an example of mosaic work, this object is the only veritable mosaic known to me from ruins in the Southwest." What I did publish (Smithsonian Report for 1896, pp. 529–530) is as follows: "As an example of mosaic work this object *is unsurpassed and with the exception of one other* is the only veritable mosaic *frog* known to me from ruins in the Southwest." I have here italicized the words that Mr Pepper has omitted in his version. There are several ancient Pueblo mosaic objects in the National Museum, collected, figured, and described by me.

J. WALTER FEWKES.

The So-called "Oldest House" in Santa Fé. — In the city of Santa Fé, New Mexico, opposite the chapel of San Miguel, there stands an adobe house that is locally reputed to have been the oldest house in this next to the oldest permanent settlement made by Europeans within the limits of the United States, and also to have been the last remnant of the ancient Indian pueblo of Analco. In January, 1902, I had the good fortune to be present during the repairing of this old structure and of having the opportunity of thoroughly examining the walls as they were reconstructed. These were found to consist of (1) numerous fragments of recent Mexican adobe work, the result of occasional repairs; (2) large portions, perhaps three-fourths of the entire structure, of old Mexican adobe masonry contemporaneous with the major part of San Miguel chapel, and (3) in three places, forming the foundation and at no point exceeding 18 inches in height, considerable fragments of the original pueblo wall, the adobe masses exactly corresponding, in texture, dimensions, and mode of construction, with those in the remaining walls of the pueblo of Kwapoge on the hill formerly occupied by Old Fort Marcy, at the northern edge of the town. The results of this examination are thus in accord with the belief of Mr Bandelier, expressed years ago, that this so-called "oldest house" belongs mainly to the historical period.

EDGAR L. HEWETT.

El Morro Inscriptions. — The latest contribution to the literature of the historically important inscriptions made by early Spanish explorers and missionaries on the face of El Morro, or "Inscription Rock," a sandstone mesa about 35 miles east of Zuñi pueblo, New Mexico, appears in vol. 1, no. 1, of the *Proceedings* of the Delaware County Institute of Science (Media, Pa., 1905), under the title "Photographs of Some of

the Inscriptions on El Morro, New Mexico." The illustrations consist of ten excellent half-tone reproductions of photographs made by Mr Homer E. Hoopes, and are accompanied by transcriptions and annotated translations by Mr Henry L. Broomall, who corrects some of the translations made by previous writers on the subject. The Spanish inscriptions on El Morro are interesting from both a historical and an ethnologic point of view, as they furnish tally dates and other information respecting some of the most important visits by the Spaniards to the western Pueblo tribes in the seventeenth and eighteenth centuries. All of the inscriptions are not included in the present treatise, but it is hoped that the remainder will be similarly photographed and translated in a future publication.

THE MISSOURI HISTORICAL SOCIETY has adopted a resolution requesting its president, Dr C. A. Peterson, to prepare a form of declaration of trust whereby the Society can vest the beneficial ownership of all the property owned by it in the people of the state of Missouri, to be subject to the control of the Society as heretofore. By transferring its building and other property to the State, it is believed a greater degree of safety for the records and collections will be insured, while the Society will become more permanent in character. Among its possessions is a valuable archeological collection, recently enriched with some of the objects recently found by Mr David I. Bushnell Sr in his excavation of the N. D. McEver's mound in Pike county, Illinois.

DR GEORGE GRANT MACCURDY of Yale University has been elected to honorary membership in the Missouri Historical Society. He has also been chosen to represent the École d'Anthropologie de Paris at the forthcoming inauguration of Dr Edmund J. James as president of the University of Illinois.

THE BRITISH GOVERNMENT has granted a pension of £200 to Dr J. G. Frazer in recognition of his literary merits and of his anthropological studies, and a pension of £150 to the Rev. Lorimer Fison in appreciation of the originality and importance of his researches in Australian and Fijian ethnology.

THE MEETING of the American Anthropological Association held in San Francisco, August 29–31, was successful in every way. The proceedings of the meeting and several of the important papers that were read will be published in the next issue of the *American Anthropologist.*

THE GOVERNMENT OF ONTARIO has planned to publish a Handbook of Canadian Ethnology and Archeology for the benefit of the Fifteenth

International Congress of Americanists to be held at Quebec in September, 1906.

THE SIXTH Congress of Criminal Anthropology will meet at Turin on April 28, 1906, under the presidency of Professor Lombroso. An exhibition of criminal anthropology will be held in connection with the congress.

THE SAUK COUNTY HISTORICAL SOCIETY has been organized in Wisconsin, to further archeological and historical research, by Messrs A. B. Stout and H. E. Cole, members of the Wisconsin Archeological Society.

DR W J MCGEE, who has devoted the last two years to the Department of Anthropology of the Louisiana Purchase Exposition, has been appointed managing director of the new Saint Louis Public Museum.

THE UNIVERSITY OF PENNSYLVANIA will receive $60,000 from the estate of the late Professor Maxwell Sommerville, who held a chair of archeology in the university.

THE BERLIN MUNICIPALITY has appropriated $20,000 to erect a statue in honor of Rudolf Virchow, which will be placed on the Karlsplatz, close to the Charity Hospital.

PROF G. F. WRIGHT, of Oberlin College, is making a trip to southern Russia and the Red sea to continue his geological and anthropological studies in that region.

THE fourth meeting of the German and Vienna Anthropological Society was held at Saltzburg on the 28th to the 30th of August.

CLARK WISSLER, Ph.D., and Berthold Laufer, Ph.D., have been appointed lecturers in anthropology at Columbia University.